Smithsonian

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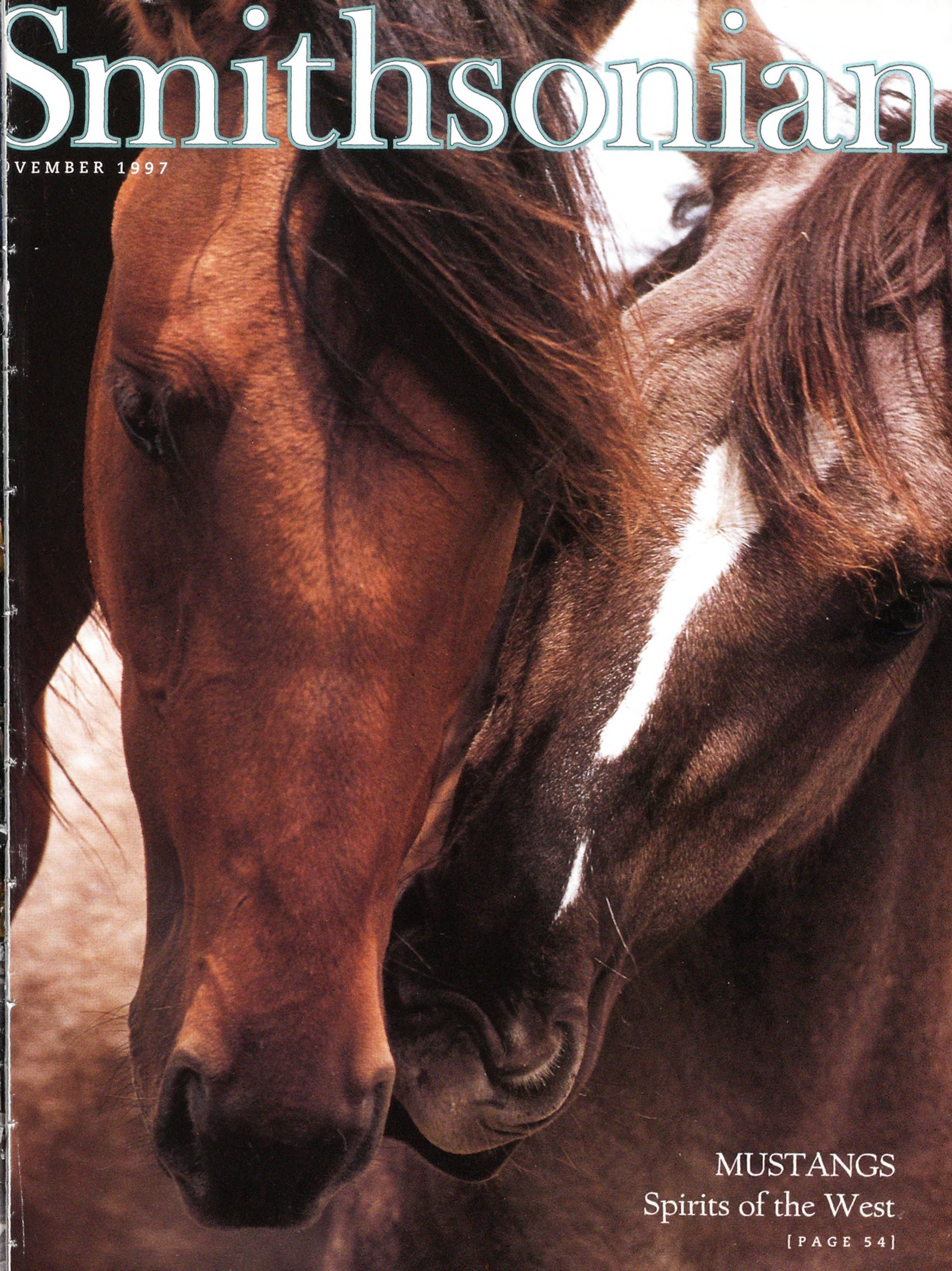

MUSTANGS
Spirits of the West

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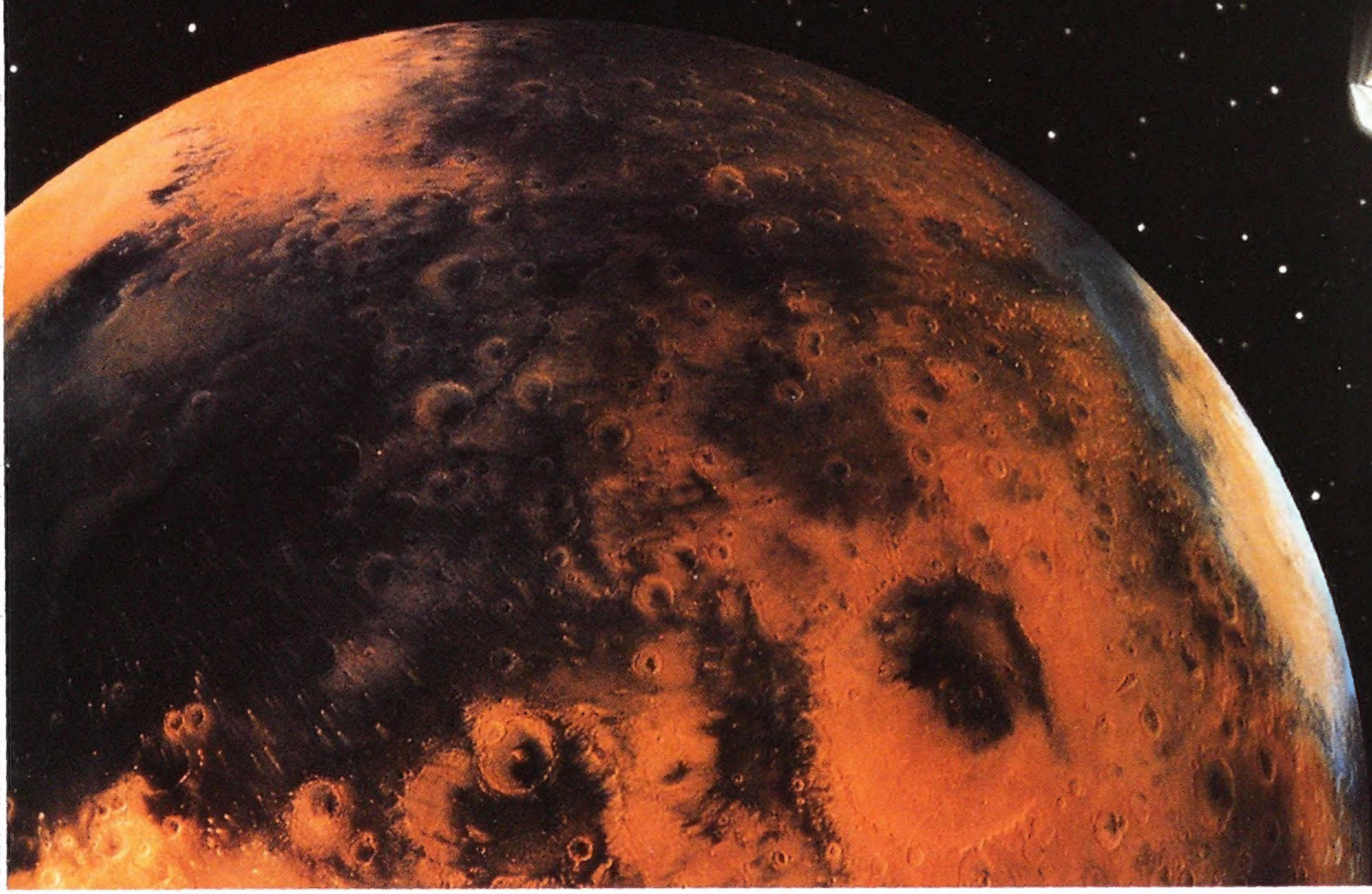
If you think it's hard getting to

MARS

try getting to plaque three millimeters

BELOW THE

GUMLINE.



1. Data on file. 2. Based on 14,783 dental professional survey respondents. ©1997 Optiva Corporation. **sonicare** is a registered trademark and *smartimer, beyond the reach of the bristles,* and *A better kind of clean* are trademarks of Optiva Corporation. Braun is a registered trademark of Braun AG.

With all due respect to the Pathfinder program, exploring the farthest reaches of *inner* space can be almost as challenging. That is, unless you have the **sonicare**® sonic toothbrush. Not only does it remove plaque bacteria from the surface, its 31,000 brush strokes per minute also create sonic waves which go *beyond the reach of the bristles.*™[1] Gently cleaning between teeth and even below the gumline.[1] In fact, **sonicare** removes hidden plaque bacteria between teeth better than the leading power brush.[1] So like the Mars Sojourner, we too like to seek out life forms in hard-to-reach places. Only we blow them away.

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- Cleans so effectively, it gently removes over 80% of coffee, tea and tobacco stains.[1]
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- We guarantee a better check-up. If you don't have one after 90 days, we'll gladly refund your money.
- Ask your dentist or hygienist. Over 98% of those who've tried us, recommend us.[2]

For more information call 1.888.676.SONIC
www.sonicare.com

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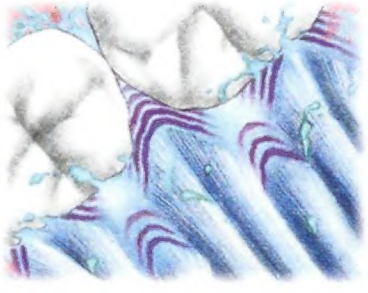

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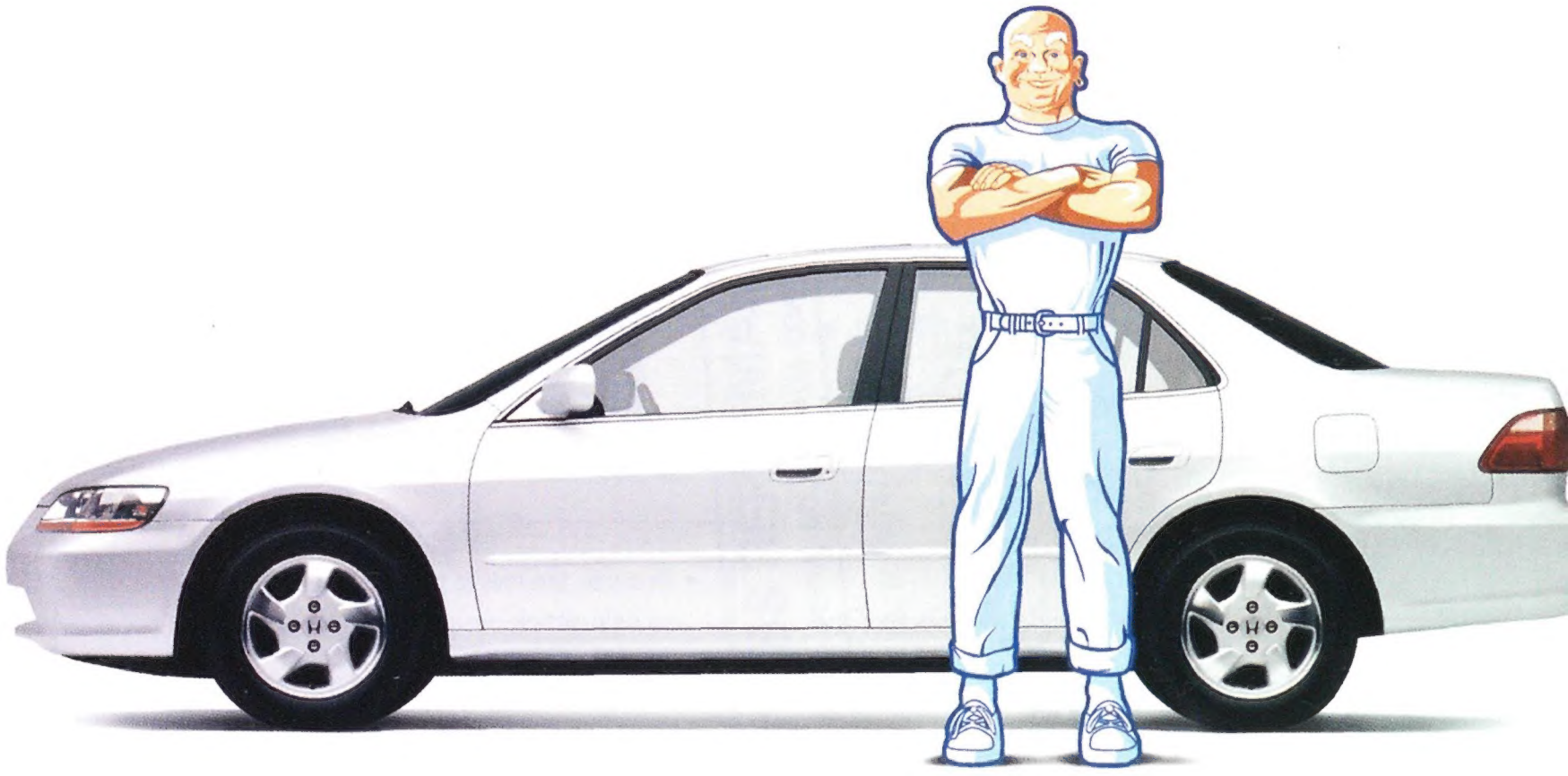

The new LEV Accord. Drive one, and see what the neighbors call you.

LEV Accord available in LX and EX 4-cylinder models. For more information about Honda's commitment to the environment, call 1-888-CC-HONDA ext. 216. ©1997 Honda North America, Inc.
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You are what you drive. Or so the saying goes. Which brings us to the new LEV Accord from Honda. LEV is short for Low-Emission Vehicle. Which means it's clean. How clean?

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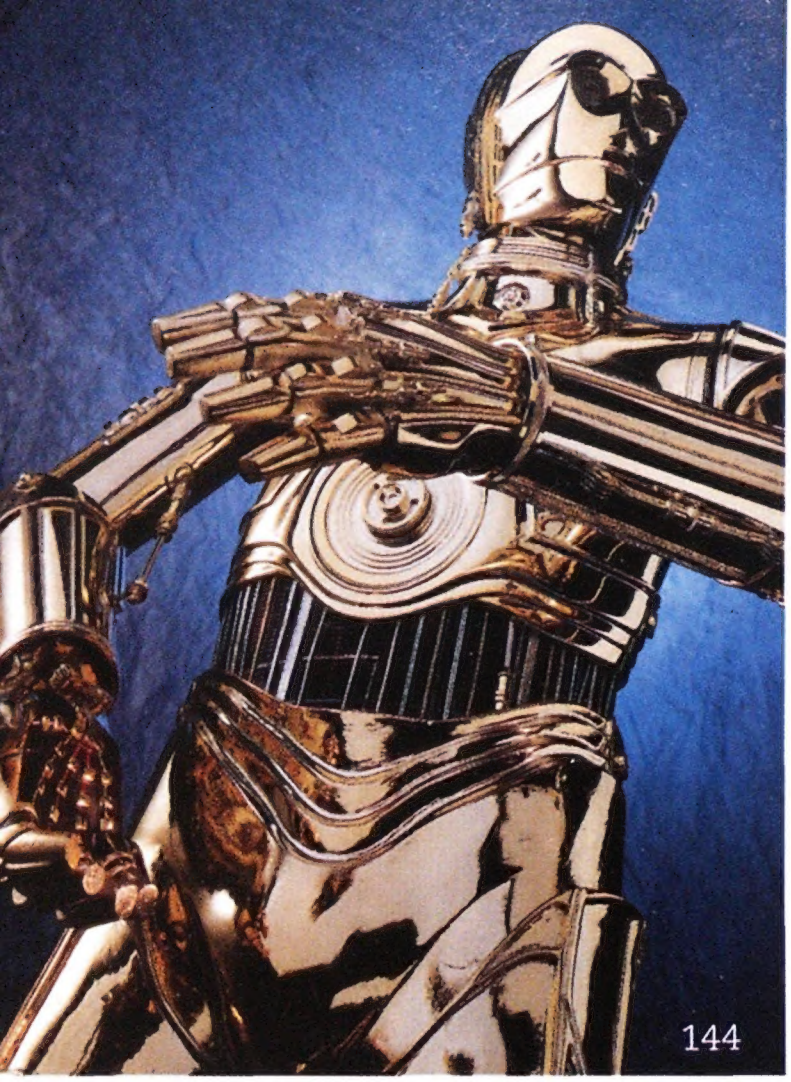
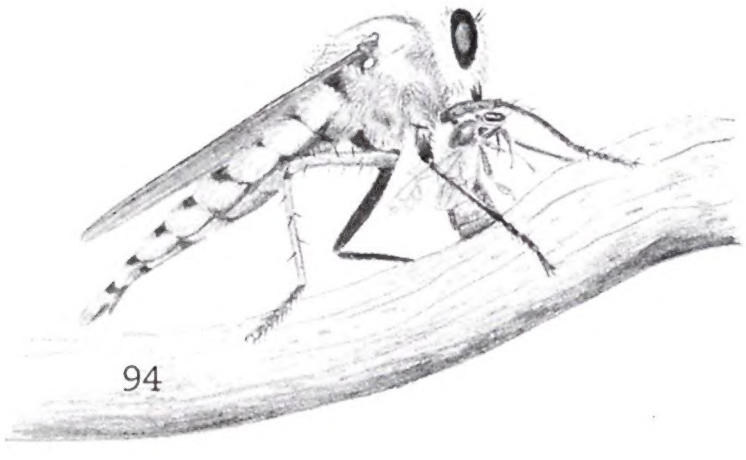
Who knows, maybe you'll even acquire a new nickname in the process.

HONDA
Thinking.





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Hepatitis B infects more than 40 million

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RESURGENCE OF MALARIA REPORTED

There is only one

way to **prevent** the next

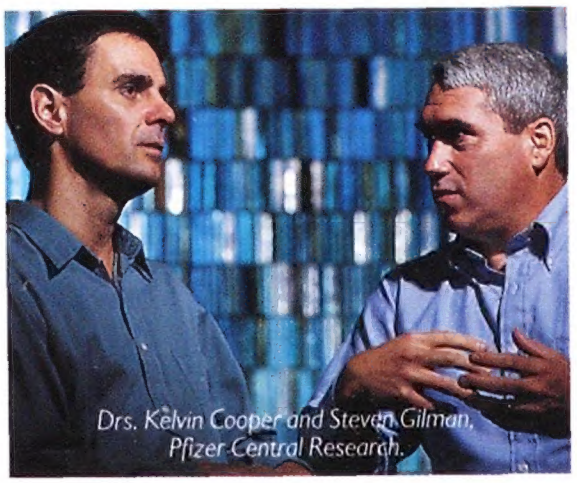
EPIDEMIC.

For more than 3 million years, the human race battled nonstop against microbes, or, as most of us know them, germs. And for millennia, microbes won. Waves of plague, typhus, influenza and other infectious diseases left death and suffering in their wake. For most of human existence, life expectancy was short and child mortality high.

Finally, just 200 years ago, humankind scored its first victory when Dr. Edward Jenner successfully immunized 8-year-old farm boy James Phipps against smallpox. Another 132 years passed before the next real advance—the discovery of penicillin in 1928 by Dr. Alexander Fleming.

Fleming's discovery marked the dawn of modern medicine. But because it was impossible to make penicillin in any significant quantity, it wasn't widely available until 1944, when a company called Pfizer pioneered its mass production, just in time to save the lives of thousands of U.S. servicemen in WW II.

> We will win battles. But the war against microbes will never end.



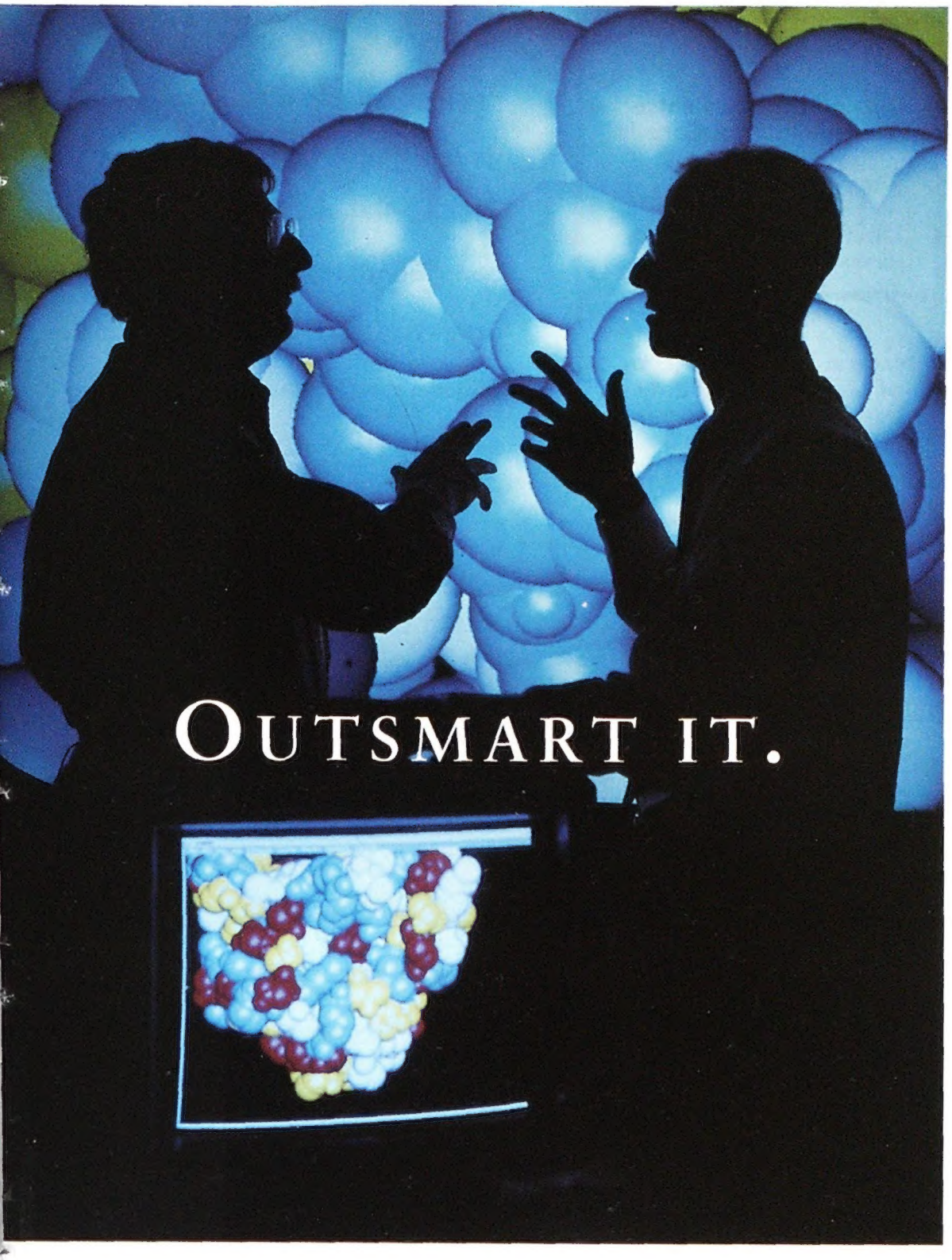
Drs. Kelvin Cooper and Steven Gilman, Pfizer Central Research.

Over the next two decades, the dramatic success of penicillin and of subsequent vaccines and antibiotics led us to believe we could control or cure anything. After all, we'd seen polio virtually vanquished and had neutralized the threat of measles, whooping cough and diseases such as influenza and pneumonia that were once killers. By the late 1960's, when then U.S. Surgeon General William Stewart announced that we could "close the book" on infectious disease, he echoed a sentiment widely held throughout the country.

He could not have been more wrong. Today we face AIDS, Ebola, Lyme disease—diseases unrecognized a generation ago. And some infectious diseases, including tuberculosis and the more common bacterial pneumonia

> Pfizer's development of a method to mass-produce penicillin saved the lives of thousands of U.S. servicemen in WW II.

541	1590	1676	1683	1796	1862
Bubonic plague kills 10,000 daily	Microscope invented	Microorganisms seen for first time	First bacteria discovered	Edward Jenner discovers smallpox inoculation	Pasteur links germs to specific diseases for first time



ll too frequently mutate to form esistance to traditional antibiotics.

Kelvin Cooper, Ph.D., director of mmunology and infectious disease esearch at Pfizer Inc's Central esearch division in Groton, onnecticut, puts the current sitution into perspective: "Microbes re the perfect evolutionary mechanisms. The lightning speed with which they can adapt gives them a great advantage in our efforts to control them. A single human generation spans about 20 years, but bacteria produce a new generation every 20 minutes. We can never underestimate their ability to evolve resistant strains."

Despite the Rambo-like survival skills of microbes, Steven C. Gilman, Ph.D., assistant director of Pfizer's immunology and infectious disease effort, is confident. "I don't agree with the apocalyptic view that the plague is once again at our door. But I do believe we must be preemptive. The failure in the 70's and 80's to realize how 'smart' bacteria can be planted the seeds of our current problems."

A decade ago, when many pharmaceutical companies radically cut back or entirely abandoned antibiotic development, Pfizer scientists continued the work that had made the company a renowned leader in anti-infective research.

> After the success of penicillin and other medicines, we started to believe we could cure anything.

1865	1892	1928	1944	1952
First surgical disinfectant reduces death rate from 45% to 15%	First virus discovered	Penicillin discovered, but only available in small amounts	First-ever mass-produced penicillin, from Pfizer	Salk discovers polio vaccine

Will Microbes Invade A City Near You?

Be on the lookout for ***Microbes: Invisible Invaders... Amazing Allies,*** a new traveling museum exhibition sponsored by Pfizer. Experience the good, the bad and the funny-looking when the world of microbes comes to life at this kid-friendly, hands-on learning environment.

Ontario Science Centre
Toronto, Ontario, Canada
Sept. 27, 1997 through
Jan. 4, 1998

Liberty Science Center
Jersey City, New Jersey
Jan. 24, 1998 through
May 3, 1998

Natural History Museum of Los Angeles County
Los Angeles, California
May 23, 1998 through
Sept. 7, 1998

California Academy of Sciences
San Francisco, CA
Oct. 3, 1998 through
January 10, 1999

Exhibit will run through Fall 2002. For more information, please visit the *Microbes* Web page at www.pfizer.com/rd/microbes .

"Our programs are science driven," says Gilman. "While some companies thought the battle had been won, Pfizer listened to its scientists, who continued to be concerned about antibiotic resistance and believed our problems were far from over."

Today Pfizer's scientists are exploring novel strategies to hold bugs at bay. One of the most promising involves the use of new discoveries about genes to craft the next generation of cures.

With a California company, Microcide, Pfizer scientists are designing an antibiotic to target the genes essential to microbes' survival. "This started with a project to find all the essential genes bacteria need to live," explains Kelvin Cooper. "They've been found. Now we're designing drugs to attack them." Pfizer and Millennium Pharmaceuticals have formed a similar partnership, which is using genetic science to search for better antifungal medications.

Hopefully, after further research and development, these new forms of treatment will be available and humanity once again will have scored a major victory against infection.

But Steve Gilman adds a final word of caution: "We must always remain dedicated to research. It's the only way to stay one step ahead. We will win battles. But the war against harmful microbes will never end."

> We must always remain dedicated to research. It's the only way to stay one step ahead.

1965	1979	1996
First synthetic antibiotic	World Health Organization proclaims the end of smallpox	Signs of microbial life found on Mars

Pfizer

We're part of the cure.

www.pfizer.com
AOL keyword: Pfizer

SMITHSONIAN

departments

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Cover Two mustang stallions commune at Cayuse Ranch in Wyoming. Rancher Emmett Brislawn says this relaxed behavior is seen during the nonbreeding season when sometimes "stallions will come near like these and talk to each other a little bit." These horses, and the others at the ranch, are pure mustangs, descendants of mounts brought over by the Spanish.
PHOTOGRAPH BY YVA MOMATIUK & JOHN EASTCOTT

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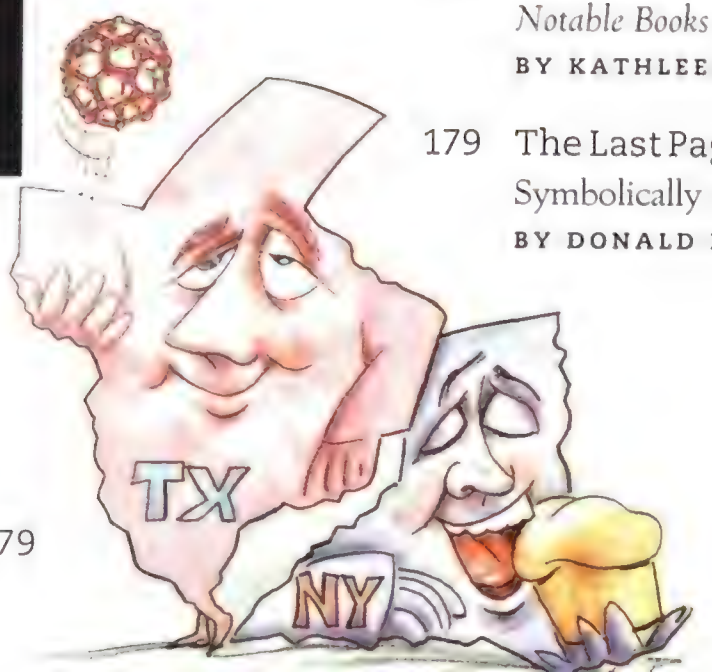

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Amazon Adventure (Brazil) *March 2-10*

Voyage to Ancient Lands: Syria, Egypt and Israel *March 2-13* Aboard the *Clelia II*.

China Insights *March 3-17 or June 11-25*

Australia and New Zealand *March 3-20*

Alpine Snow Trains (Switzerland) *March 5-16*

Treasures of Costa Rica *March 9-21*

Mexico's Copper Canyon *March 13-21*

Ancient Egypt *March 13-28*

Senegal and Mali *March 14-28*

Legacy of Sicily (Italy) *March 19-30*

Galápagos Islands *March 21-April 1* Aboard the *Isabela II*.

Passage to Arabia: Muscat to Aqaba
March 30-April 19 Aboard the *Caledonia Star*.

Classical Greece *April 11-25*

Splendors of Greece and Turkey
April 16-May 1 Aboard the *Regina Renaissance*.

Mysteries of Morocco *April 18-May 2*

Naples and Amalfi Coast (Italy) *April 19-30*

Dutch Waterways *April 21-May 4* Aboard the *Swiss Crystal*.

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Smithsonian "Anytime" Weekend (Washington, D.C.) Bring your family to see the nation's capital and enjoy the many free activities on the Mall. Packages begin at $215 for two persons for two nights, and include a private Castle tour, an Imax film screening and much more.

American Snapshots Celebrate the historic towns, ethnic enclaves and working communities that are the fabric of our national culture and heritage: **Amelia Island (Florida)** *April 16-19 or April 23-26*, **Ohio's Amish Country** *April 30-May 3*, **Eastern Wisconsin** *September* and **Puget Sound (Washington)** *September 24-27*

NEW! **Antebellum South: New Orleans to Natchez** *March 6-13*

Hawaii Trails and Reefs *March 15-26*

Decorative Art of the Old South: Savannah and Charleston *March 27-April 2*

Hiking in Big Bend (Texas) *March 28-April 5*

NEW! **Spotlight on Tucson** *March 29-April 5*

Colonial South: Jacksonville to Charleston *April 4-11* Aboard the *Nantucket Clipper*.

NEW! **Civil War: Contest for the Capitals (Middle Atlantic States)** *April 23-May 3*

NEW! **San Francisco Bay Arts** *April 24-30*

NEW! **Civil War in Western Territories (New Mexico and Arizona)** *May 4-10*

Smithsonian Seminars

Concentrated study of specific topics:

Diplomatic Washington (Washington, D.C.) *March 1-5*

Civil War: Vicksburg (Mississippi) *March 25-29*

Alexander Calder: The Master of Wit and Whimsy (Washington, D.C.) *March 27-31*

NEW! **Jefferson Architecture Masterpieces (Charlottesville, Virginia)** *April 2-5*

New Orleans Jazz Festival *April 22-26*

Garden Design: Past, Present and Future (Washington, D.C.) *April 23-27*

Culinary Arts of China *May 11-25*

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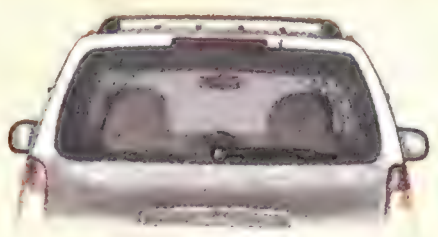

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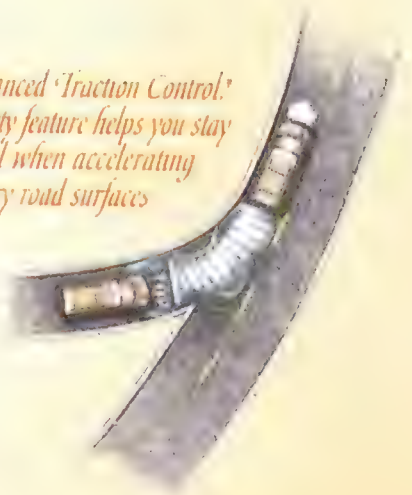

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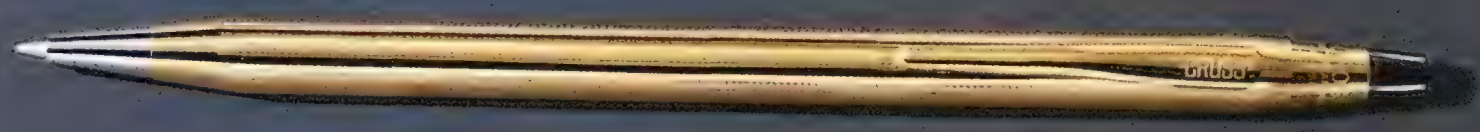

It's inspired novels, screenplays and speeches.

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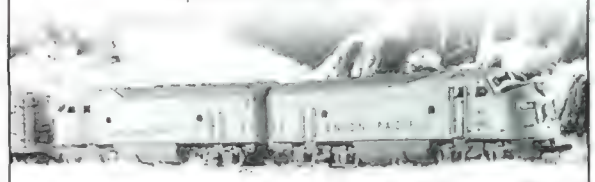

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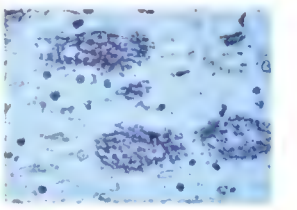
He's working to help Alzheimer's patients remember, and that's helping families hope.

Axel Unterbeck
pharmaceutical company researcher

"When I was a young student, people used to think that memory loss and dementia were a normal part of aging. Today we know that in many cases, the real cause is Alzheimer's disease. As a pharmaceutical company researcher, I am committed to finding ways of treating this disease."

"Currently, there are about 4 million people in the United States with Alzheimer's disease. Unfortunately, this number will dramatically increase as our population ages. My company is searching for treatments that might slow down, halt or maybe even reverse the progression of Alzheimer's."



Brain cells from an Alzheimer's patient

"We think Alzheimer's disease has several different causes," says Axel Unterbeck, a pharmaceutical company researcher. "Some forms are genetic while others might involve additional factors. Because it affects memory and learning, it's one of the most complex diseases we know of." Unterbeck and his team of researchers are working on genes that are linked to Alzheimer's disease. "Four genes have been identified so far," Unterbeck says. "These gene discoveries give us, for the first time, a realistic hope to find a cure."

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THROUGH INNOVATIVE OUTREACH PROGRAMS, THE SMITHSONIAN EXTENDS ITS RESOURCES FAR AND WIDE

FOR MOST OF ITS 151 YEARS, THE SMITHSONIAN HAS been easily available to Americans only if they have been able to visit the nation's capital or our museums in New York. And every year millions have, in school groups, with their families and on business trips. In fact, 80 percent of our visitors travel to our Washington, D.C. museums from regions outside the metropolitan area.

Still, as someone who has spent most of his adult life in California, far from these museums and monuments, I have encouraged the Smithsonian's growing commitment to make its resources and expertise available to Americans wherever they live. Our goal is to increase accessibility for those who visit us in Washington and want to continue to benefit from Smithsonian programs at home, and to provide new opportunities for other Americans to be served by their national museum complex even if they cannot join us on the Mall.

Our national initiative takes many forms. You, who are reading this magazine in the comfort of your own homes (or is it in a doctor's office?), are already aware of one of the most important examples of our national outreach. SMITHSONIAN has more than two million subscribers.

Equally important in our national focus is the Institution's program of touring exhibitions, as well as our rich presence on the World Wide Web and our new resolve to build associations with museums around the country by sharing our collections through long-term loans. We are making an extended commitment to educational outreach and to increasing our participation in television and films.

The Smithsonian Institution Traveling Exhibition Service (SITES) has been our major means for taking Smithsonian exhibitions nationwide—and a great success story. SITES started small in its efforts to package Smithsonian exhibits for travel and to identify exhibits that had potential for a national audience. Though originally supported by nonfederal funds, its importance as an outreach resource for cities and towns across America led Congress to supplement its annual operating budget in 1992.

To commemorate our sesquicentennial, the Smithsonian took hundreds of our most treasured objects to America's hometowns. "America's Smithsonian" has traveled to nine cities and has welcomed about three million visitors.

The electronic Smithsonian has provided us with another delivery system for the Institution's resources and expertise. Smithsonian's World Wide Web site has more than 40 hours of continuous material, the creations of curators and other Smithsonian staff. The site now welcomes about ten million "hits" a month, 20 percent of them international in origin.

Our "affiliations" program is among our boldest but is still in its infancy. We lend Smithsonian objects to museums that want to display them on a long-term basis and are willing and able to finance the costs of borrowing, exhibition and maintenance. The advantages are evident: more people can benefit from our collections, and we can share the costs of conservation. The Smithsonian and participating museums will each be strengthened.

National outreach in the Smithsonian of the Nineties also takes the form of increasing cooperation with classroom-based teaching. Our *Smithsonian Resource Guides for Teachers* lists 455 items, including science kits and inventive curriculum plans such as *Image and Identity: Clothing and Adolescence in the 1990s*, which explores the clues that clothing provides to understanding culture. We have recently launched a Natural Partners Initiative, which uses technology to link classrooms to Smithsonian scholars and exhibits. Also new is our program with cultural institutions and schools in Cleveland to apply what we have learned at the Smithsonian Early Enrichment Center about the uses of museums as learning centers for preschool children.

So it is fair to say that the modern Smithsonian is everywhere. We may even be coming soon to your television set and movie theater. We are working with Creative Artists Agency to locate partners who will help us create quality programming in these two important and pervasive areas of popular culture. In the context of public television and Imax films, we have already created programs in which we take great pride.

The Smithsonian will continue to find innovative ways to make itself available to you wherever you live. You should expect no less of your national museum.

I. MICHAEL HEYMAN, SECRETARY

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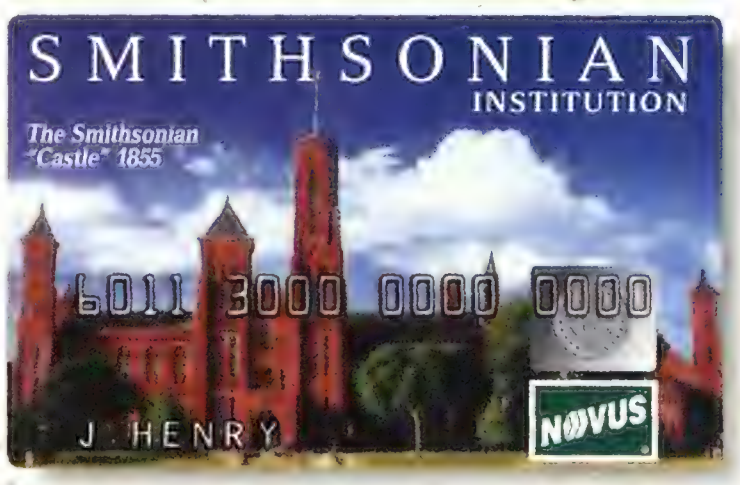

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GEM HALL

MICHAEL KERNAN'S SEPTEMBER ARTICLE about the Janet Annenberg Hooker Hall of Geology, Gems and Minerals brought back a flood of memories. I was a newly commissioned second lieutenant in December 1944 and assigned to the Pentagon when I got word that my best friend, Staff Sgt. Edward J. Beamon, lost both arms during the Battle of the Bulge and that Eddie had been transferred to Walter Reed Army Hospital. The night I heard about Eddie, I went to see him, and there, sitting on the edge of his bed, was Evalyn Walsh McLean wearing the Hope Diamond. She had brought her butler, who served cold beer to the boys and ice cream to the visiting girls. None of the amputees had yet been fitted with a prosthesis, but Mrs. McLean let anyone else who could hold the diamond.

Many a night the diamond was passed from bed to bed, and lots of girls took turns hanging it around their necks. Some nights just before closing time, I would go looking for Mrs. McLean's diamond. When I brought it back to her, she always told me, "Just put it in your pocket until I leave."

For the next six months she invited Eddie and me to stay at her house on Saturday nights after her weekly party for enlisted men. (Mrs. McLean had a photographer shoot this picture [below] during one of those soirees.) We always said goodbye to her on Sunday morning as she sat reading in her bedroom. I can still see vividly the large silver crucifix that had been blessed by the Pope, which hung above her four-poster bed on the same hook as the Hope Diamond. She told us that after the deaths of her son and husband, she was determined to break the centuries-old curse that the jewel was said to bring to its owners.

Dante E. Guazzo
Charlotte, North Carolina

LAUNDRY

I READ WITH GREAT PLEASURE THE article by Chiori Santiago about the ins and outs of laundry and who does it and how.

With earnings from my first job after college, I bought my mother a modern tub washer and spinner. This was a definite improvement since the old wringer once caught my mother's long hair and pulled her head right up to the rollers.

Gini Gregg
Paradise Valley, Arizona

MY GREAT-GRANDFATHER JOSEPH Adams was an inventor in Janesville, Wisconsin, and held patents on manually operated washing machines dating from 1864 to 1866. His wife Mary Georgiana Mitchem Adams wrote a letter to relatives on March 11, 1866: "I can do the washing [for a family of six] and hang up the clothes bright and clean in four hours at the most, with no help save my Ne Plus Ultra and Champion Wringer. I would not give the Ne Plus Ultra for half [a] dozen girls."

Edwin Burrow Smith
Huntington Woods, Michigan

I'VE NEVER HAD TO DO MY WASH IN a river or in a big wash pot hung over a fire of sticks by a creek, but I've borne witness to everything from washboard to automatic. I remember the weekly radio show "Ma Perkins." The show's sponsor, Procter & Gamble, ran advertisements between segments of the "washboard weeper," and I often wondered how I could tell whether I was really getting my sheets "nine to eleven tintometer shades whiter."

Ellen Turnbell
Berea, Kentucky

IN 1938 MY PARENTS BOUGHT THE revolutionary Bendix automatic washing machine. Our friends didn't believe us when we told them of its range of capabilities, so my mother

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lined up chairs in front of the washer, which was stationed in the garage. When company came over, we took them out there where they watched the entire washing cycle in utter fascination through the small, front-loading window.

Gudron Silva
San Francisco, California

I LEARNED ALL ABOUT TAP WATER, river water, enzymes, phosphates, subtilisin, amylase, detergents, bleach and soap from your article, but not one word about nature's best cleaning agent. My wife uses rainwater that falls into our cistern and claims it can't be beat: she says it softens the clothes, cuts soap consumption 30 to 40 percent, and gets her clothes so white she has to wear sunglasses when she hangs out the sheets. I worry that we may someday have a drought and my wife will leave our empty cistern and me.

C. R. Kennedy
Rushville, Ohio

SMITHSONIAN'S EDITORS SHOULD STAY after class and write on the chalkboard 100 times: "Washing is not ironing." Your September cover led readers into thinking you were offering an article about the history of irons and ironing. Instead you gave us the steamy lather of washing.

You should put your editing pencil through a wringer.

Robert W. Gordon
Emerald Isle, North Carolina

ARTHUR CONAN DOYLE

I ENJOYED TOM HUNTINGTON'S ARTICLE about Sir Arthur Conan Doyle and his interest in occult matters. When I was a small child in the 1920s, my great-great-aunt Claire immigrated to the United States from England. She bought land in Summerland, California, and built a hotel. Aunt Claire then divided the rest of the land into 25-by-25-foot lots and built small cubicles with no roofs so people could come and communicate with their loved ones from the world beyond. It was amazing how many people came.

Velma E. Holub
Hammond, Oregon

GIBRALTAR

IT'S TOO BAD YOU DID NOT HAVE SPACE to show a picture—or at least a diagram—of Michaud D'Arcon's remarkable "battering ships" in your article on Gibraltar. D'Arcon designed the ships with many-layered, reinforced bulwarks and slanting sides that made cannonballs bounce off. They prefigured our Civil War ironclad *Merrimack* of nearly a century later. Circulating water throughout the hulls and regularly wetting down surfaces not only cut the risk of fire but also the threat of ghastly wounds from flying splinters that so often occurred when wooden ships fought each other.

Penny Herriot
Huntington, Maryland

IF SPAIN WANTS GIBRALTAR BACK, she should first return the ports of Ceuta and Melilla across the Mediterranean Sea in Morocco.

Alf Olsen
Mt. Sinai, New York

YOUR VERY SENIOR BOARD EDITOR Timothy Foote writes well for a man his age. According to the endnote to his article, he "last wrote on America's westward rush in 1846." I trust his talents will not be wasted for another century and a half.

Robert S. Feller
Waynesville, North Carolina

AROUND THE MALL & BEYOND

I RECENTLY HAD THE HONOR OF working with David Hockney on his painting *Snails Space*, which you described at the end of the *Around the Mall & Beyond* column. Mr. Hockney had the vision to incorporate the use of light with the painting, and his representatives contacted Vari-Lite in Dallas, who called me to work on the project at Mr. Hockney's studio in Los Angeles. The finishing touches of the painting were added during the next two weeks, with different hues and intensities of light being created to complement the piece. Mr. Hockney, his assistant David Schmidt and I created the lighting sequence, which Mr. Schmidt and I re-created at the National Museum of American Art.

Patrick Schulze
Los Angeles, California

THE ARIZONA STATE PARKS ARE IN the final stages of developing the Kartchner Caverns State Park. The caverns were discovered in 1974, kept secret for 14 years and then came under our stewardship in 1988. The tunnels are complete; the visitor center and displays are under construction; the trails are now being set. The remaining question has been how to light this underground cathedral.

Bruce Hathaway's column addressed our dilemma from an artistic standpoint, and we have contacted the chairman of the Museum and Gallery Lighting Committee of the Illuminating Engineering Society of North America, Frank Florentine, who is the lighting designer at the National Air and Space Museum.

Because of SMITHSONIAN, we see the light at the end of the tunnel.

Kenneth E. Travous, Executive Director
Arizona State Parks
Phoenix, Arizona

WRITE TO SMITHSONIAN

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Hot-Rock Cooking Party

FOR ARCHAEOLOGISTS, THE PROOF IS IN THE PUDDING—OR RATHER, IN THE AGAVE, CACTUS AND OTHER GOODIES

BY JAKE PAGE

MEN AND WOMEN MILLED AROUND MOUNDS OF DIRT IN a National Park Service campground in southern Texas. A couple of them were gingerly plucking burned pads of prickly pear cactus out of the hot coals and rocks in the pit oven they had dug open moments before.

"It smells like molasses," said Alston Thoms. A cowboy turned Texas A&M University archaeologist, he was commenting on the latest effort to reproduce a cuisine that dates back 6,000 years. That evidently was a time when early man in North America began to make a crucial, if little studied until now, change in lifestyle.

The pit oven was one of several dug on the edge of the presently receding Amistad Reservoir, which lies a bit east of where the Rio Grande and the Pecos River meet on the Texas-Mexico border.

It is an unpromising place, the Lower Pecos, with rolling desert-like terrain stretching endlessly in every direction and covered with thorny and spiky plants—agave, acacia, prickly pear. The soil, if the dry stuff can be called that, is littered with chunks and pebbles of white limestone, giving the landscape a bleached, dead look. It doesn't seem like it would be the number one choice for hunters and gatherers of any era. In fact, the ancient Indians tended to take up residence in the region's countless deep canyons where, among other activities, they spent a lot of time hauling limestone rocks into their caves and burning them.

All around the world, archaeologists have encountered burned rocks, rocks cracked by fire, pestiferous junk heaps of rocks in which they would dig around, pushing them aside, looking for artifacts—arrowheads, scrapers, what have you. All these darn rocks were in the way.

By a decade ago, however, some archaeologists had reinterpreted the rocks and now regard them as artifacts, part of what they call a "feature," a sign of a particular activity, in this case ovens that were usually in the form of pits. The pits were lined with rocks, over which a fire was made; more rocks were added, and then food, which could have been sealed in with dirt and baked, or wrapped in moist plants and steamed.

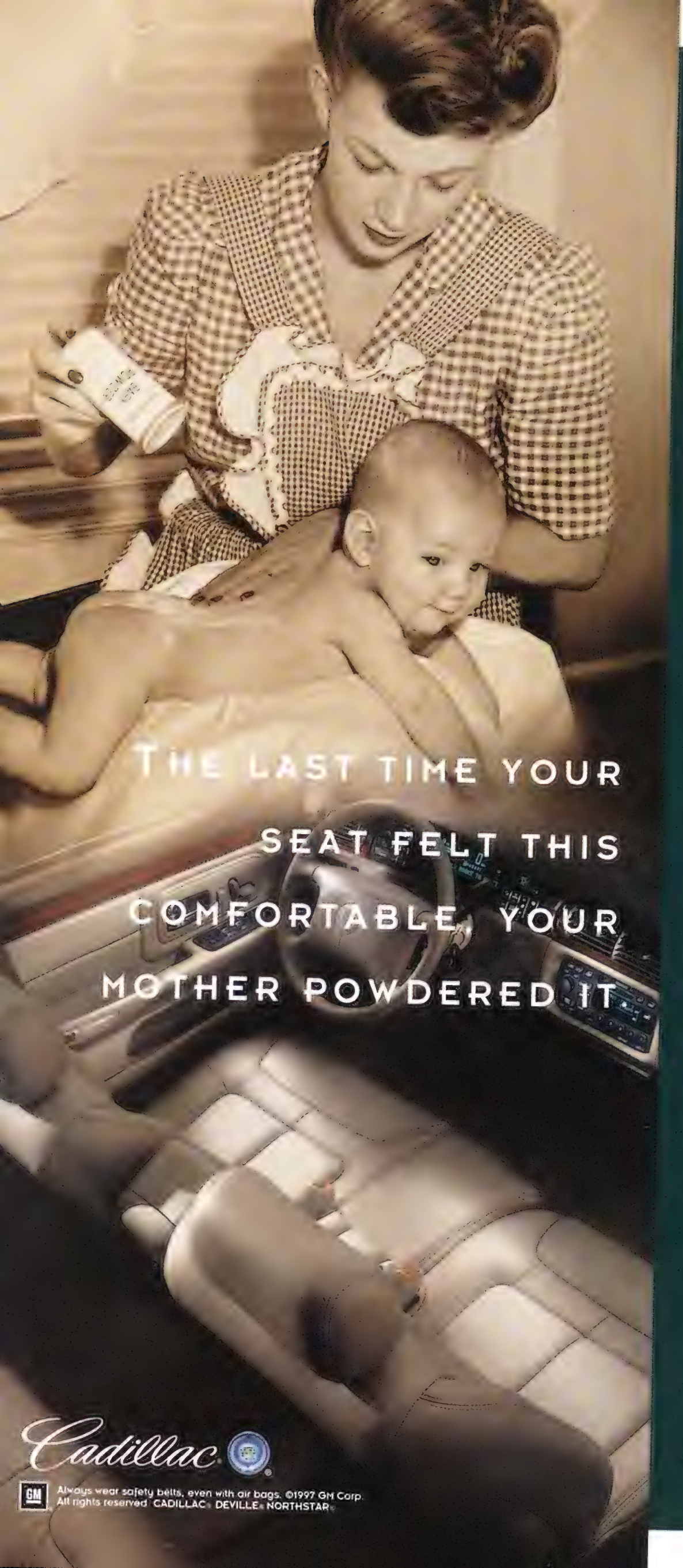
Around 7500 B.C., the landscape of the Lower Pecos had become desert-like. This meant that people were probably forced to change from a diet of mostly meat to one of mostly plants. But in a place like the south-central plains of Texas, the plants are downright hostile.

Lechuguilla, for example, which is a kind of agave (or century plant), contains an abundance of saponin, a steroid compound that is related to cortisone and is linked to a sugar. The sap from its lethal-looking pointy leaves can be used as arrow-tip poison or can be dumped into a creek to kill fish. But careful examination of some 300 human coprolites in one south Texas cave showed that, beginning about 6,000 years ago, lechuguilla was tops in popularity for a long time in the cuisine of these ancient Indians. Also high on the list of the some 50 plant species on the menu were sotol (another succulent), prickly pear cactus and wild onion.

For most of us, the picture that emerges from the existence of the pits and the analysis of the desiccated stools would be sufficient, but not for modern archaeologists. For them, from such lowly facts a thousand questions bloom.

What exactly were they cooking in those pits—lechuguilla? If so, why? And what else? It seems like an awful lot of work. How much work? How much rock and how much fuelwood does it take to produce and store how much heat to cook how much lechuguilla?

Researchers toss prickly pear pads on a cooking pit. The process is not entirely dissimilar from a New England clam bake.



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To answer such questions, you can look at the archaeological record and guess. You can also look at what tribal people today do in this regard—the ethnographic record. The Apaches, for example, still make pit ovens to cook agave. Another way, however, is to do it yourself, an approach known as middle-range research.

This is why the University of Texas and Texas A&M brought some 40 hot-rock archaeologists to a campground near the Amistad Reservoir last February. They did not make a pit oven the same way as the ancient Indians. The archaeologists dug the pits through a layer of caliche (crusted soil), and as one digger said, the ancient Indians "had limited access to pickaxes."

Besides that, the ancients didn't weigh anything that went in the pit, but here every rock was weighed, and all the firewood. So was the food and the cactus pads that were put on top of the fire and over the food to shield it. From the interstices of the rocks, the pads and the food, thin tubes of thermocouples snaked out to a meter attached to a computer in the front seat of a pickup. This was not, you might say, your mother's pit oven.

Once the pit was opened and the cactus pads plucked off, the lechuguilla was offered around. "It has a bit of a bitter taste still."

Several archaeologists had been preparing lechuguilla for the pit. This entailed chopping off the 30-odd fleshy leaves to get to the plant's heart much as a cook might prepare an artichoke. They hacked away strenuously with a variety of tools that were unavailable in the Holocene—machetes, even a saw—trying to achieve the neat 45-degree angle found in the archaeological record. While no one timed this effort, it took more than a few minutes and a lot of energy to lop off all of each plant's leaves. At this point, the grand guru of middle-range theory, Lewis Binford of Southern Methodist University, demonstrated another way. With a rock as a hammer and a log as an anvil, he bashed each lechuguilla leaf, bruising it. Then, with a knife, he sliced them off quite easily.

Everyone agreed that this would seem to be the most efficient way to get to the lechuguilla's heart. Binford spent much of the weekend in conversations with individuals and small groups, always pressing, always challenging. "If we already knew exactly how to do this right," Binford said, "then we couldn't learn anything from it. You don't know what's germane until you spread yourself a little thin, till you put your knowledge in jeopardy."

The scientists concurred that burned-rock technology represented what they call "intensification"—a shift to a highly intensive means of using the landscape to survive. Driven perhaps by climatic shifts or population pressure, people were resorting to increasingly costly food-processing practices.

One scholar, LuAnn Wandsnider of the University of Nebraska, had recently published a seminal paper on the chemistry of such cooking practices, what could be thought of as "The Joy of Paleo-Cooking." Wandsnider concluded that our own practice of spending tremendous amounts of energy (often in the form of fossil fuel) to process a comparatively small quantity of food "is an ironic continuation of trends that began in the distant past."

Seeking to present these ovens in a slightly larger focus, Binford offered the scenario of a band of people sending out some young boys to alert relatives while at home the adults dig a big pit oven (some of the ovens that have been discovered measure as much as 12 feet across). For several days they have been out collecting lechuguilla and other plants. The extended family gathers from far and wide, the oven is filled, and they all talk about what's going on in the landscape—where the deer are, maybe, where the acacias are putting out seed.

So here, 6,000 years later, much the same thing is happening. In an age of e-mail and cellular phones, it seems that one of the most efficient ways to progress is still to call in the troops from here and there and chat it up while standing around a steaming, smoking pit oven.

On Sunday, two days after the meeting had begun, the time had come to put theory to the test. First to open a cooking pit was Phil Dering, an archaeobotanist with Texas A&M's Center for Environmental Archaeology. The lechuguilla had been baking for 36 hours, but the ideal cooking time, he confessed, would have been 48 hours, to break down all the saponins and free up those tasty sugars.

Once the pit was opened and the cactus pads plucked off, Phil offered around the much-awaited delicacy.

"It has a bit of a bitter taste still, Phil."

"It's a little soapy still, Phil." "This one is sweeter, like brown sugar maybe."

"You're not going to be taking a plane trip right away are you?" Phil asked one recipient who still was savoring the acrid, slightly mushy green stuff. "If it's not cooked enough," he explained, "it makes a great laxative."

"Hey, thanks a lot, Phil."

"Compliments to the chef."

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THE OBJECT

AT HAND

Langley's Feat—and Folly

THE SMITHSONIAN SECRETARY ASSEMBLED A DEVOTED TEAM, A REMARKABLE ENGINE AND A PLANE THAT WOULDN'T FLY

BY EDWARDS PARK

From a houseboat on the Potomac, Samuel Pierpont Langley's "Great Aerodrome"—positioned to be the first powered, manned aircraft—took a test "flight" on October 7, 1903. Despite its powerful engine, it slid into the water "like a handful of mortar."

IT STANDS UNOBTRUSIVELY IN THE Early Flight gallery on the ground floor of the National Air and Space Museum (NASM). Look below and just beyond the 1894 glider flown by aviation pioneer Otto Lilienthal, and there it is, a primitive radial aircraft engine not quite four feet in diameter, modestly displayed. But don't dismiss it. This small piece of machinery has a tale to tell.

By the start of the 20th century the Secretary of the Smithsonian, Samuel Pierpont Langley, had bet his reputation—not to mention tens of thousands of government dollars—that he would build the world's first powered, man-carrying flying machine.

Langley was no harebrained dreamer, but a serious scholar with a background in mathematics, architecture and astronomy. Coolly scientific, he demanded much of his staff. His memos often contained the words "I desire . . ." and his employees hopped to fulfill those desires.

Inspired by an 1886 lecture on the possibility of manned flight, he was badly bitten by the bug. By the 1890s he had built and tested a number of models, which were powered at first by rubber bands. He considered various engines—gasoline, carbonic acid gas, electric, even gunpowder—but at the time, such engines would have been too large, too dangerous or not powerful enough. Eventually, he settled on steam, and after a number of failed attempts, he built two gasoline-fueled, steam-powered models that flew beautifully. On two fine days in 1896—one in May and one in November—the little planes, each about 16 feet long, soared away from their launching pad, a houseboat on the Potomac River. Small steam engines whiffling happily, they held a steady course on an even keel, one covering 3,300 feet, the other reaching 4,200 feet and a speed of 30 miles an hour.

Langley had decided on a tandem-wing configuration—two sets of wings of almost equal span set one behind the other—for what he called his "aerodromes." They had a large dihedral; that is, the wings formed a squashed V when seen head-on. This gave them stability in flight.

Professor Langley should have quit while he was ahead. But his success with small-scale powered flight intensified his dream of building an aerodrome big enough to carry a man. As his friend Octave Chanute—an important aeronautical guru of the day—pointed out, Langley had "cast iron ways." One was his conviction that simply reproducing those successful models on a grand scale would result

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in a man-carrying "Great Aerodrome." This would require, among other things, a lot of horsepower in a lightweight engine, a daunting prospect a century ago.

As the Army and Navy geared up for the Spanish-American War in 1898, Secretary Langley's enthusiasm for flight stirred their interest. He wrote to a friend at Cornell that "an aerodrome capable of a speed of 30 miles an hour maintained for three hours, carrying an 'aeronaut' and possibly some missiles may be attempted." He added that he needed some sort of gas engine (there having been much progress in gasoline engines in the previous few years), and asked if his friend could recommend a "young man who is morally trustworthy ('a good fellow') with some gumption and a professional training."

In response, young Charles Matthews Manly showed up at the Smithsonian. A brilliant engineering student, he was about to graduate with a mechanical engineering degree from Cornell. When selected to meet Langley's request, he took off for Washington like a shot, receiving his degree in absentia.

One of Manly's first tasks was to supervise the construction of a remarkable gasoline engine designed by a Hungarian immigrant in New York, Stephen Marius Balzer. Balzer had been a watchmaker at Tiffany's, then studied engineering at night school while working at a machine shop. Such industry had paid off in 1894, when New Yorkers gaped at the city's first homegrown automobile—built by Balzer. Now in the Smithsonian's National Museum of American History, it's a simple structure of sturdy pipe work with a small three-cylinder engine to spin the rear axle.

Balzer's engine, light yet powerful, had intrigued Langley. He contracted with Balzer for the world's first "aero engine" to power what he hoped would be the world's first manned airplane, already being built in a shop behind the Smithsonian Castle where the Enid A. Haupt Garden now delights the eye.

Trying to meet Langley's "desires" for less weight and more power, Balzer put together in New York the five-cylinder engine now displayed, with Manly's modifications, at Air and Space. It was originally a rotary, like his automobile engine had been: the entire engine turned around the driveshaft. But Balzer had a terrible time getting it to work properly, or to generate adequate horsepower. Manly helped him, encouraged him, nudged him and strove to get him more money. Langley shelled it out, mostly from a $50,000 grant from Congress, and fidgeted while Balzer fussed.

Manly encouraged and nudged Balzer for two years before turning his five-cylinder rotary engine into the radial now on display at Air and Space.

Time dragged on. Month after month passed. Manly's notes to Langley indicate the growing frustrations of the team. July 1899: "I am rather at a loss to explain how it is that one day Mr. Balzer thinks the present cylinders will work, and the next day he thinks that the engine will have to be rebuilt. . . ."

September 1899: "The engine for the great aerodrome is as yet unfinished, but Mr. Balzer promises to be ready with it by the 22nd of the present month. . . ."

June 1900: "The gasoline engine which was contracted for on the 12th of December, 1898, by Mr. Balzer can neither be accepted nor condemned at the present moment."

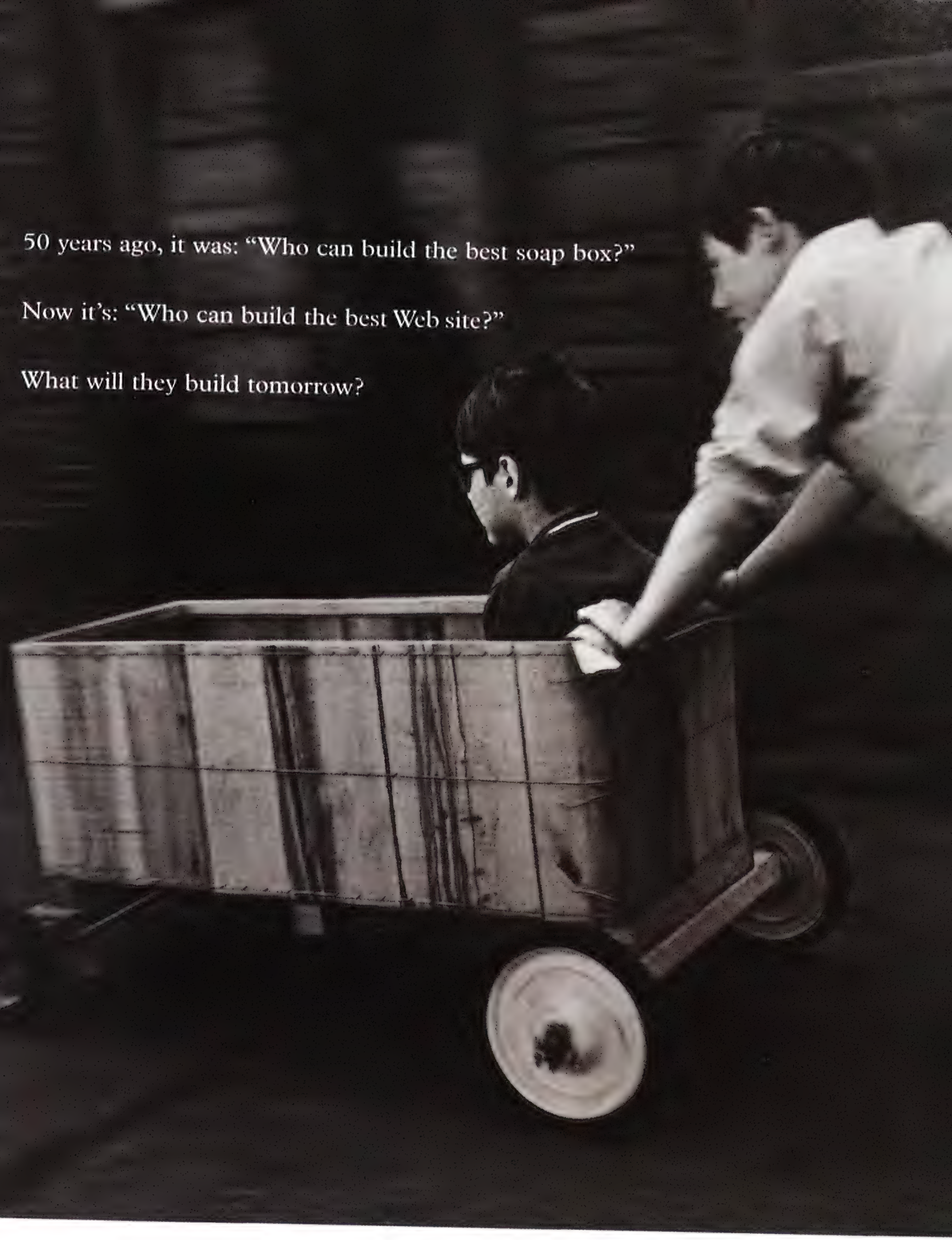
In that same letter, dated June 19, Manly agreed to "go abroad for a few weeks" with Langley to investigate alternatives. In Europe, engineers advised them against the rotary design. Lubrication, for instance, was a problem, for a rotating engine obviously throws oil away from its center. As the cylinders spin around, oil gathers at their outer ends.

Why, then, had the idea of a rotary appealed to the Langley team at all?

For one thing, its spin cooled the cylinders. Air cooling meant that the tank, pipes and pump for water cooling weren't needed—an admirable loss of weight. Also, the spin of the engine served the function of a flywheel, a feature of some early engines that helped them to run more smoothly.

But as more time passed and more problems arose with Balzer's engine, Manly decided to follow the Europeans' advice. By the fall of 1900, he had given up on the rotary concept. In September, he wrote his boss, still in Europe, that his recent effort with the aero engine had "been with the cylinders held stationary and cooled by temporary water jackets." He had turned Balzer's rotary engine into a fixed radial—and one cooled by water instead of air.

At last problems began to fade and performance improve, with an immediate leap from 6-8 hp in Balzer's rotary to 12-16 hp in Manly's radial version. More tests and improvements



What's next?

SONY

followed. By March 1901 the radial engine was putting out some 18 hp, but Manly foresaw the need for more. So, with funds from new grants, he replaced Balzer's heavy pistons with light ones and increased the size of the cylinders. By March 1903, the rebuilt engine was spinning the aerodrome's two propellers at the rate of 575 revolutions per minute. "The engine proper," wrote Manly, "weighs 120 lbs., and develops on test 52 brake horsepower. . . ." In this same letter

Confident of his engine, Manly (left) volunteered to fly the 1903 "Great Aerodrome" designed by Langley.

to Langley, the young assistant writes that his confidence in the engine is so complete that "I am prepared to risk myself with it in actual flight."

He didn't have long to wait. In the summer of 1903, after test flights with a quarter-scale model, Langley was ready. By September, the Great Aerodrome roosted on its catapult atop a bulky houseboat in the Potomac. Last adjustments went on as though Langley, after 17 years of working toward this climax, and now 69 years old, could hardly bring himself to reach it.

On October 7, Manly climbed aboard, started the engine and ran it up to full speed. It had taken him and Balzer a total of five years for this impressive piece of machinery, with its five cylinders radiating star-like from its driveshaft, to be wrenched up to this zenith of its performance. Now, as its bellow reached full voice, he signaled for the plane's release.

"This was done," reads Manly's report, "and the car started down the track under the combined impetus of the launching springs and the propellers. . . ." And then: "I experienced a slight jerk and discovered immediately that the machine was plunging forward and downward. . . ."

Manly had no time to shut down the engine before hitting the water. He got dunked, but swam away unhurt. Much of the airplane's structure was crushed when it hit the water. So was Langley. The press howled with laughter. The much-touted flying machine had slipped into the water "like a handful of mortar."

The tragedy dragged on as Langley got his dream machine repaired and ready for another try. On December 8, 1903, Manly crawled back into the cockpit, revved up the engine, signaled . . . and again plunged into the Potomac. The wings had simply snapped in the rush of air. This time Manly nearly drowned in the icy river, and when he got back aboard the houseboat he cut loose with a blast of blue language in front of all the dignitaries who had been invited to witness the triumph. They were surprised. They shouldn't have been.

Just over one week later, the Wrights flew at Kitty Hawk and won the race for the air. Langley's mistake was in scaling up his small models without accounting for the fact that on the full-sized plane, drag would be increased exponentially. The Wrights started with full-sized gliders and had flown them for years. They knew how to fly. Manly had none of this experience—just guts.

But Langley's wreck had a wonderful engine—created for a plane that wouldn't fly. Had the craft flown, Manly's creation would have been the first airplane engine in the world; certainly, it was built earlier and far better than the 12 hp job that got the Wrights airborne. Balzer's original would have been the first aerial rotary, a type of engine that drove a swarm of fighter planes in World War I. They had all the same advantages of Balzer's, and the same problems—hard to control because of torque, hard to keep lubricated because of centrifugal force. Castor oil was the lubrication of choice for them, and many a pilot of an early German Fokker, British Sopwith or French Nieuport suffered digestive unrest by breathing the fumes flung back by a rotary.

The improvements made by Manly turned the engine into the world's first radial engine designed for flight, the same basic type of engine that took Lindbergh to Paris and drove many classic bombers and fighters in World War II.

Langley, shattered by defeat, died in 1906. Manly's health was marred by constant exposure to the intense heat of metalwork. He ran an engineering firm in New York, and died in 1927, only 51 years old. Balzer lived until 1940. Few remember his name.

But the heartbreaking efforts of this disparate team live on in their splendid little gray engine. Notice the sheen on those big cylinders. Could that be the shine of sweat? Or maybe the splash of tears?

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A Real "Nation's Attic"

IT'S A PLACE WITH A TWO-FOOT-WIDE "DEAD ZONE," A "WET" POD AND A REFRIGERATED ROOM FOR THE GARBAGE

BY MICHAEL KERNAN

The facility that Vince Wilcox directs is designed to protect collections from pests, especially us. So researchers do as he does—they put on gloves before touching the antlers.

VINCE WILCOX IS A MAN IN LOVE with a building. It's a love of labor for he'd already spent several years planning the Smithsonian's Museum Support Center in Suitland, Maryland, before he was named director while the gargantuan structure was being erected in 1981. Nowadays he is apt to be called as far away as Korea or Australia to advise other museums on how to build their own.

And they need him, since few people understand that while the "Nation's Attic" (as some people call the Smithsonian) may make a fine phrase, an attic is really a terrible place to store stuff.

"The problem is that space has different functions," Wilcox told me. "And architects know people space better than thing space. I was in the main painting storage room of a brand-new museum a while ago, and the entire room was humming. The paintings were actually vibrating. I saw that the main air-handling duct for the whole building had been run right through the room. See, it had been labeled 'storage' on the plans, so the architect just assumed it wouldn't need to be a sensitive space. They had to relocate the thing at huge expense."

Even in Washington, he added, some museums have badly designed work spaces: curving or sharply angular corridors may look beautiful, but they're the devil for moving large objects. Once when he had to move some 20-foot harpoons through a museum, he solved the corridor problem by maneuvering them through a window, along the outside of the building and back in by another window.

"The windows have been sealed off since," he chuckled. "I have no idea what they'll do now."

A museum's goals are contradictory in the first place: you want to preserve things forever yet also use them for research and education. "I'm always thinking about future generations," explained Wilcox, "and how I can protect the unique, irreplaceable objects in these collections for them. Ideally we'd seal these items off in a dark, absolutely dust-free, pest-free, strictly climate-controlled chamber. But people need to be able to study them, and human contact is the biggest cause of deterioration."

On that note he took me around the vast building, concentrating on anthropology, his own area. He used to be collections manager for the anthropology department at the National Museum of Natural History and earlier was curator of the research branch at the Museum of the American Indian, Heye Foundation, in New York. You should realize that the Support Center contains 500,000 square feet of space, so it's one of the largest buildings in the Smithsonian roster. Laid out in an echelon of four zigs and four zags with a wide corridor called the "Street" down the center like a spine, it has offices and labs on one side and four giant storage pods on the other.

These pods are something special. Each is about the size of a football field and has three stories. They each have their own environmental con-

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The "wet" pod at the Smithsonian's massive storage and study complex is for jars and tanks of sea creatures and other specimens that need to be preserved in fluid.

trols and security systems. They are kept at 70 degrees and 50 percent relative humidity with a leeway of 2 percent, an expensive proposition were it not for the fact that they don't house people. The absence of human body heat and comings and goings vastly simplifies the situation.

The people in the labs and offices do enjoy air so thoroughly filtered that there are virtually no pollens. Ideal for people with allergies, but you can't open your window, have office plants or eat or drink at your desk. To make up for all that and for being so far from the Mall, staffers can plant gardens on the landscaped grounds or play badminton during lunch hour.

Walking down the Street, I noted the skylights nearly 40 feet up, the great rivers of ducts and cables, the occasional Indian canoe or plesiosaur skeleton on the walls.

"We were the first Smithsonian building to be fully wired for Internet communication," Wilcox announced proudly. "And with all the utility lines and even the high-pressure steam line for the molecular systematics lab out in the open here, there's easy access for maintenance."

We stopped at a special "clean room" designed for meteorite storage. Through the window I could see an examination box with rubber sleeves that you insert your arms into. The atmosphere in the box is dry nitrogen, which is relatively inert. A humid, oxygen atmosphere corrodes meteorites. The only other such chamber he knows of is at the Johnson Space Center in Houston.

On to an anthropology processing lab: trays and trays of Indian beads, necklaces, bits of feather, animal bones and teeth, all arrayed in acid-free boxes that will be placed in cabinets and then into the pods. There are boxes within boxes.

"We're still moving into this place," Wilcox remarked. Meaning that everything brought here from Natural History, American History or wherever is inventoried, cleaned and remounted in the safest, most efficient way known to science.

"Every item in the anthropology collection has a bar code on it with the catalog number matching the code on the box and fed into a computer," he pointed out. "A researcher can locate a specific object in seconds."

The significance, not to say the enormity, of this coding system came to me only gradually. Not so much when he showed me the hundreds and hundreds of kachina dolls being packed immovably in individual boxes (so they can be examined without being touched); not so much when I saw the Casas Grandes Mex-

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ican pots, old, delicate and implausibly valuable, and which in another era would have perched atop file cabinets along with Pacific Island mats, Maori shields and the curator's dusty hat.

No, it was when I was exposed to the spear and harpoon collection that I understood the importance of those bar codes.

We stood in one of the pods. Wilcox pulled out a vertical rack, rather like the racks where art galleries stash large paintings. On it were fixed a couple dozen lances and harpoons from all over the world. Another rack: spears, double-curve bows, arrows laid out in their acid-free boxes. ("They used to be just bound together in bunches.") Another: paddles from the Northwest, from Tahiti, from New Guinea. Indian mats and blankets, mostly rolled to save space. Some were so old that they still had the "poison" warning tags on them, dating from the days when many objects were treated with toxic preservatives.

I stared down this particular alley into the darkness 80 yards away. Every ten inches there was another handle, another rack. On both sides. Just for spears and paddles. All told, the Museum Support Center has more than 12 miles of cabinets.

The sheer scale of the Smithsonian Institution's collections was coming home to me.

We weren't done yet.

In drawers somewhere else I saw magnificent old Indian dresses of soft leather and beads. I saw rare feather decorations, snowshoes, dolls. In another pod I was introduced to a whole herd of elephant skulls. Some of them weigh hundreds of pounds and can hardly be moved, so the racks that hold them are on wheels for better access.

One skull had a yellowed tag: "September 1909, Th. Roosevelt."

"You know, the skull from the elephant in the Natural History rotunda is here. That elephant is just a stuffed skin. We have the tusks, too. The ones at the rotunda are fake. The real ones are too heavy for the type of display built there."

In the next row: hundreds of antlers. Deer antlers, antelope antlers, fantastic moose antlers six feet across, all there waiting to be studied.

"John Wesley Powell started arguing with a fellow geologist about who had the bigger brain. So they made a bet."

We came upon some researchers taking pictures of bugs, as well as a woman nestled among the stacks with a notebook and a recorder, carefully investigating some of the millions of pinned insects. In some locations gloves are needed: Wilcox has seen more than one careless handler's fingerprint immortalized on the side of some ancient object, etched there over the years by acids on the surface of human skin.

The pods, each with insulated walls a foot and a half thick, are surrounded by a two-foot-wide pest-control "dead zone." A refrigerated refuse room also helps deter insects. "The Smithsonian needs another 3.5 million square feet," said Wilcox. "So we've planned for expansion to be done over the next 20 or 30 years. The building was designed so it can be added onto easily."

Here we are in the "wet" pod, among millions of specimens in glass jars, bottles, tanks and tubs. I saw a few of the thousands upon thousands of sea creatures, preserved in 75 percent ethanol. I saw in a bathtub-size tank three or four giant octopuses that looked to be six feet long.

"This one was collected in 1914 by the Pacific Halibut Survey, a famous expedition," said Wilcox, reading another old label. "Why?" I asked. "Why save a 1914 octopus?"

"It's a baseline for research. You fish up an octopus today from the same area where these were found, and you compare the size and morphology. Trace elements such as mercury. There is a vast amount of information locked up here in these cabinets and tanks. You just never know when some new research technique will make these specimens really useful."

Back in the '20s, he recalled, the Museum of the American Indian threw out piles of old potsherds from a Manhattan dig. Forty years later, when carbon dating and other techniques had been invented, scientists fumed over the loss of those sherds.

"No one thought 14 years ago that molecular biology would become such a significant research tool in museums. But we were able to make space for it here; we remodeled an area for a gene analysis lab that ranks with those at the National Institutes of Health and other medical centers. Over the years we have revamped the air-handling system and safety practices to accommodate today's sophisticated curatorial research."

Gazing from a balcony out over one of the enormous pods, a warehouse space big enough to hold Citizen Kane's collections, or, as Wilcox muttered, like the one in the final scene in *Raiders of the Lost Ark*, I could believe that the Old Testament ark might indeed lie somewhere in that forest of boxes.

As we walk back past the wet pod I ask about human remains. "Tell you a story. John Wesley Powell [the Grand Canyon explorer] started arguing with a fellow geologist about who had the bigger brain. So they made a bet. In their wills they requested that a surgeon—who was later a visiting scientist at the Smithsonian—measure their brains. Powell won but he never knew it. Oh yes, his is here. In one of those jars."

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SMITHSONIAN

HIGHLIGHTS

The Art of Stanley Spencer

The village of Cookham, 30 miles west of London, lies along the river Thames in a bucolic setting of marsh meadows, bridges and reedy riverbanks. It was here that British artist Stanley Spencer was born in 1891, and it was here that he lived until his death in 1959. It was here, too, that the celebrated visionary absorbed the ideas and images that would lead him to create some of the most impassioned and astonishingly original paintings of this century. A major exhibition of Spencer's work has recently begun a three-city tour at the Hirshhorn Museum and Sculpture Garden. On view there through January 11, 1998, the show features biblical and allegorical works, domestic scenes, nudes and landscapes that span five decades of the artist's career, starting with the 1914 self-portrait at right. "Spencer produced some of this century's most powerful representations of the figure," says Hirshhorn director James Demetrion. "His vision is unique in 20th-century art." —*Diane M. Bolz*

As you leave the ship behind and wend your way through the *lushness* of the Costa Rican rainforest, the notes from last evening's *recital* of Haydn's Cello Concerto No.1 mark your every step.

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HIRSHHORN MUSEUM & SCULPTURE GARDEN

Stanley Spencer: An English Vision (through January 11, 1998) Landscapes, still-lifes, genre paintings, portraits, social narratives and religious scenes represent the 20th-century British artist's highly independent, eccentric vision. See *Highlights*, page 42.

Directions—Toba Khedoori (November 20-February 22, 1998) A floor-to-ceiling work on paper was created especially for the museum's Directions Gallery by the Los Angeles-based, Australian-born artist.

The Collection in Context: Raymond Duchamp-Villon's "The Horse" (through November 30) One-gallery presentation explores how the work of this French sculptor (1876-1918) echoed his response to the machine.

NATIONAL AIR AND SPACE MUSEUM

Star Wars: The Magic of Myth (October 31-November 1, 1998) Exhibition commemorating the 20th anniversary of the *Star Wars* trilogy features original props, models, costumes and artworks. Highlights include characters Yoda and Jabba the Hutt, a production model for the *Millennium Falcon*, and such icons as Luke Skywalker's lightsaber and Han Solo's figure frozen in carbonite. Free timed same-day tickets will be available only at the museum's ticket desk, on a first-come, first-served basis. Advance tickets are available through ProTix for a service charge of $2.25 per ticket. For information, call 202-786-2122 (24-hour recording). See page 144.

Space Race New permanent exhibition traces the competition in space between the United States and the former Soviet Union.

NATIONAL MUSEUM OF AMERICAN HISTORY

Blue Guitars (November 12-November 1998) A collection of 24 blue guitars illustrates the role of color in musical instrument making.

Color Sells (November 12-September 1998) Display cases focus on innovations in color design and look at how colors affect our daily lives.

The Paint By Numbers Collection (opens November 6) Two display cases feature papers from the Paint By Numbers painting kit company. (Above exhibitions complement the Lemelson Center symposium "The Color of Invention," November 13-16.)

Wade in the Water: African American Sacred Music Traditions (through December 7) Exhibition adapted from the 1994 award-winning radio series traces the growth of this genre from its roots in slavery to its contemporary interpretation in black churches.

Science in American Life Permanent exhibition tracks advances and discoveries in science over the past 125 years.

NATIONAL POSTAL MUSEUM
[NEAR UNION STATION ON CAPITOL HILL]

Manning the Post: A Woman's Job (opens November 14) Exhibition profiles Colonial postmaster and printer Mary Katherine Goddard.

The First Federal Postage Stamp Issue (through January 2, 1998) Display commemorates the 150th anniversary of the first U.S. postage stamps.

NATIONAL MUSEUM OF NATURAL HISTORY

Janet Annenberg Hooker Hall of Geology, Gems and Minerals New gallery showcasing the National Gem Collection explores Earth's changing surface and the birth of the Solar System by taking visitors from the depths of a copper mine to distant stars.

Agayuliyararput (Our Way of Making Prayer): The Living Tradition of Yup'ik Masks (through January 4, 1998) Traveling exhibition from the Anchorage Museum of History and Art features 150 masks created by Yup'ik Eskimos.

Planning a Smithsonian Visit?

Receive a free Associates' planning packet. Write Smithsonian Information, Smithsonian Institution, Washington, D.C. 20560, or call 202-357-2700 (voice) or 202-357-1729 (TTY), 9 A.M. - 5 P.M., Monday-Friday; 10 A.M. - 4 P.M., Saturday-Sunday. *Note:* Parking near the Smithsonian is limited. The Metrorail subway is convenient to all museums (details in packet).

Begin your visit at the Smithsonian Information Center's Associates' Reception Desk—open 9 A.M. - 4 P.M. daily—in the Castle. Special materials await you there. The Court dining room and all other eating facilities in the National Museum of Natural History are closed. Associates may receive a discount at the National Air and Space Museum's Wright Place restaurant, open 11:30 A.M. - 3 P.M. daily.

Smithsonian museums are generally open 10 A.M. - 5:30 P.M. daily, except December 25. Hours at the National Zoo are 10 A.M. - 4:30 P.M. daily for buildings, 6 A.M. - 6 P.M. for grounds.

SMITHSONIAN WEBSITE

The Smithsonian home page on the World Wide Web (www.si.edu) offers on-line information about exhibitions, collections, events and products.

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Volcano Watch: Maurice and Katia Krafft and the Smithsonian (October 31-April 30, 1998) Display explores the work of the Smithsonian's Global Volcanism Program and honors the Kraffts, whose efforts to alert people to the dangers of volcanoes saved thousands of lives, but cost their own.

NATIONAL ZOOLOGICAL PARK

Amazonia Science Gallery Permanent exhibition looks at the work of Smithsonian biologists worldwide.
Pollinarium Permanent installation examines the means of plant reproduction—plants, butterflies, bees.

NATIONAL MUSEUM OF AFRICAN ART

The Poetics of Line: Seven Artists of the Nsukka Group, Nigeria (through April 26, 1998) Exhibition presents the work of a group of artists who studied or taught in the Department of Fine and Applied Arts at the University of Nigeria, Nsukka.
Gifts to the National Collection of African Art (through March 4, 1998) Exhibition of recent gifts honors the collection-building legacy of the late director Sylvia H. Williams.

FREER GALLERY OF ART

Chinese Gardens in the Painter's Imagination (through February 1, 1998) Show features paintings from the 12th to the 19th century that depict real and imaginary gardens.
Japanese Art of the Meiji Era (1868-1912) (through April 26, 1998) Exhibition explores the museum's holdings of paintings, drawings, ceramics, lacquer, metalwork and cloisonné from the Meiji era. See page 51.
Art for Art's Sake (runs indefinitely) Display takes a look at the collection of American art assembled by the gallery's founder, Charles Lang Freer.

ARTHUR M. SACKLER GALLERY

The Jewel and the Rose: Art for Shah-Jahan (through February 1998) Paintings, textiles and objects illustrate the splendor of Indian artistic expression during the reign of Shah-Jahan.
Puja: Expressions of Hindu Devotion (runs indefinitely) Exhibition features objects made in India between the 9th and 20th centuries for *puja*, an act of personal devotion to a deity.
Khmer Ceramics (runs indefinitely) Rare glazed vessels from the 9th-to-14th-century Khmer Empire.

Ceramic sculpture Hercules Beetle (1986) is in the Renwick's Michael Lucero show.

NATIONAL PORTRAIT GALLERY

George C. Marshall: Soldier of Peace (November 7-July 12, 1998) Exhibition of paintings, photographs and memorabilia commemorates the 50th anniversary of the Marshall Plan and salutes the life and career of American statesman Gen. George C. Marshall (SMITHSONIAN, August 1997).
Mathew Brady's Portraits: Images as History, Photography as Art (through January 4, 1998) Comprehensive exhibition features more than 100 images representing all facets of Brady's work.
Edith Wharton's World: Portraits of People and Places (through January 25, 1998) Paintings, miniatures, photographs and literary artifacts evoke the life and milieu of the novelist.

NATIONAL MUSEUM OF AMERICAN ART

Ansel Adams, A Legacy: Masterworks from the Friends of Photography Collection (November 14-March 29, 1998) Images by the renowned American landscape photographer illustrate his point of view as an artist, a photographer and an advocate of national environmental stances.
Time Out—Sports in Art (November 21-April 5, 1998) Exhibition marking the opening of the new MCI Center in Washington, D.C. celebrates sports as envisioned by a variety of painters, sculptors and photographers.
Paintings of Charles Burchfield (through January 25, 1998) Works by the famous watercolorist are examined in the context of the culture and artistic environment in which he worked.
Nam June Paik's "Megatron/Matrix" (through November 30) Ambitious installation by pioneer video artist Paik features 215 TV monitors.

RENWICK GALLERY

Michael Lucero: Sculpture (through January 4, 1998) Show presents two decades of the contemporary artist's glazed ceramic, bronze and mixed-media sculptures.
Reinstallation of the Permanent Collection Thematic reinstallation showcases 19th- and 20th-century works by nationally prominent artists in a variety of craft media.

ARTS AND INDUSTRIES BUILDING

In Search of Balance: The Artist Scholar (November 13-March 11, 1998) Paintings, sculptures and other works by five African-American scholars.
Stories of the People (through January 25, 1998) Exhibition showcases objects from the collection of the National Museum of the American Indian that represent six native cultures.
Discovery Theater Live theater for young audiences. For information, showtimes, ticket prices and reservations, call 202-357-1500 (voice or TTY) weekdays, 9 A.M.-4 P.M.

Text continues on p. 51

At your age, with your high cholesterol, what's your risk of a first heart attack?

If you have high cholesterol, figure your risk of a first heart attack.

Fill in your points for each risk factor.

☐ **Age: Men**
0 pts. Less than 35 2 pts. 40 to 48 4 pts. 54+
1 pt. 35 to 39 3 pts. 49 to 53

☐ **Age: Women**
0 pts. Less than 42 2 pts. 45 to 54 4 pts. 74+
1 pt. 42 to 44 3 pts. 55 to 73

☐ **Family History:**
2 pts. My family has a history of heart disease or heart attacks before the age of 60

☐ **Inactive Lifestyle:**
1 pt. I rarely exercise or do anything physically demanding

☐ **Weight:**
1 pt. I'm more than 20 lbs. over my ideal weight

☐ **Smoking:**
1 pt. I'm a smoker

☐ **Diabetic:**
1 pt. Male Diabetic
2 pts. Female Diabetic

☐ **Total Cholesterol Level:**
0 pts. Less than 240 mg/dL
1 pt. 240 to 315 mg/dL
2 pts. More than 315 mg/dL

☐ **HDL Level (good cholesterol):**
0 pts. 39 to 59 mg/dL
1 pt. 30 to 38 mg/dL
2 pts. Under 30 mg/dL
-1 pt. Over 60 mg/dL

☐ **Blood Pressure:**
I don't take blood pressure medication; my blood pressure is:
(*Use your top or higher blood pressure number*)
0 pts. Less than 140 mmHg
1 pt. 140 to 170 mmHg
2 pts. Greater than 170 mmHg
(or)
1 pt. I am currently taking blood pressure medication

☐ **Total Points**

If you scored 4 points or more, you could be at above average risk of a first heart attack compared to the general adult population. The more points you score, the greater your risk.

If you have already had a heart attack or have heart disease, your heart attack risk is significantly higher. **Only your doctor can evaluate your risk and recommend treatment plans to reduce your risk.** If you don't know your cholesterol level or blood pressure, ask your doctor if your levels should be checked.

Provided as an educational service from Bristol-Myers Squibb Company.

American Heart Association℠
Fighting Heart Disease and Stroke

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PRAVACHOL, in combination with diet, is proven to reduce the risk of a first heart attack, reduce the risk of death from heart disease, and reduce the need for surgery to clear blocked coronary arteries (such as bypass or angioplasty) based on a landmark study including over 6,500 males with high cholesterol and no evidence of heart disease. Because PRAVACHOL is a prescription drug, you should ask your doctor or healthcare professional if PRAVACHOL is right for you. Some mild side effects, such as slight rash or stomach upset, occur in about 2–4% of patients.

PRAVACHOL®

Proven to help prevent first heart attacks in people with high cholesterol.

PRAVACHOL is the only cholesterol-lowering drug of its kind proven to help prevent first heart attacks. And the grim fact is, up to 33% of people do not survive their first heart attack. Improving your diet and exercise is an important first step, but may not be enough. So ask your doctor about PRAVACHOL. It reduces the risk of a first heart attack and the need for surgery to clear blocked coronary arteries. PRAVACHOL has been prescribed by doctors for millions of men and women worldwide. It could help you live a longer, healthier life.

Ask your doctor if PRAVACHOL is right for you. Or call **1-800-PREVENT** for information on *first heart attack prevention* including a free brochure from the American Heart Association. It's all provided by Bristol-Myers Squibb.

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PRAVACHOL should not be taken by women who are pregnant or nursing, people who are allergic to any of its ingredients or by anyone with liver disease. Your doctor may perform simple blood tests to check your liver function before and during treatment with PRAVACHOL. Muscle pain or weakness could be a sign of a rare but serious side effect and should be reported to your doctor right away. Be sure your doctor knows about other medications you may be taking in order to avoid any possible serious drug interactions. Please see important information on the next page.

PRAVACHOL®

Pravastatin Sodium Tablets

CONTRAINDICATIONS: Hypersensitivity to any component of this medication. Active liver disease or unexplained, persistent elevations in liver function tests (see **WARNINGS**). *Pregnancy and lactation.* Atherosclerosis is a chronic process and discontinuation of lipid-lowering drugs during pregnancy should have little impact on the outcome of long-term therapy of primary hypercholesterolemia. Cholesterol and other products of cholesterol biosynthesis are essential components for fetal development (including synthesis of steroids and cell membranes). Since HMG-CoA reductase inhibitors decrease cholesterol synthesis and possibly the synthesis of other biologically active substances derived from cholesterol, they may cause fetal harm when administered to pregnant women. Therefore, HMG-CoA reductase inhibitors are contraindicated during pregnancy and in nursing mothers. **Pravastatin should be administered to women of childbearing age only when such patients are highly unlikely to conceive and have been informed of the potential hazards.** If the patient becomes pregnant while taking this class of drug, therapy should be discontinued and the patient apprised of the potential hazard to the fetus.

WARNINGS: Liver Enzymes: HMG-CoA reductase inhibitors, like some other lipid-lowering therapies, have been associated with biochemical abnormalities of liver function. Increases of serum transaminase (ALT, AST) values to more than 3 times the upper limit of normal occurring on 2 or more (not necessarily sequential) occasions have been reported in 1.3% of patients treated with pravastatin in the US over an average period of 18 months. These abnormalities were not associated with cholestasis and did not appear to be related to treatment duration. In those patients in whom these abnormalities were believed to be related to pravastatin and who were discontinued from therapy, the transaminase levels usually fell slowly to pretreatment levels. These biochemical findings are usually asymptomatic although worldwide experience indicates that anorexia, weakness, and/or abdominal pain may also be present in rare patients. In the largest long-term placebo-controlled clinical trial with pravastatin (Pravastatin Primary Prevention Study; See **Clinical Pharmacology**), the overall incidence of AST and/or ALT elevations to greater than three times the upper limit of normal was 1.05% in the pravastatin group as compared to 0.75% in the placebo group. One (0.03%) pravastatin-treated patient and 2 (0.06%) placebo-treated patients were discontinued because of transaminase elevations. Of the patients with normal liver function at week 12, three of 2875 treated with pravastatin (0.10%) and one of the 2919 placebo patients (0.03%) had elevations of AST greater than three times the upper limit of normal on two consecutive measurements and/or discontinued due to elevations in transaminase levels during the 4.8 years (median treatment) of the study. **It is recommended that liver function tests be performed prior to and at 12 weeks following initiation of therapy or the elevation of dose.** Patients who develop increased transaminase levels or signs and symptoms of liver disease should be monitored with a second liver function evaluation to confirm the finding and be followed thereafter with frequent liver function tests until the abnormality(ies) return to normal. Should an increase in AST or ALT of three times the upper limit of normal or greater persist, withdrawal of pravastatin therapy is recommended. Active liver disease or unexplained transaminase elevations are contraindications to the use of pravastatin (see **CONTRAINDICATIONS**). Caution should be exercised when pravastatin is administered to patients with a history of liver disease or heavy alcohol ingestion (see **CLINICAL PHARMACOLOGY: Pharmacokinetics/Metabolism**). Such patients should be closely monitored, started at the lower end of the recommended dosing range, and titrated to the desired therapeutic effect. **Skeletal Muscle: Rare cases of rhabdomyolysis with acute renal failure secondary to myoglobinuria have been reported with pravastatin and other drugs in this class.** Uncomplicated myalgia has also been reported in pravastatin-treated patients (see **ADVERSE REACTIONS**). Myopathy, defined as muscle aching or muscle weakness in conjunction with increases in creatine phosphokinase (CPK) values to greater than 10 times the upper normal limit, was rare (< 0.1%) in pravastatin clinical trials. Myopathy should be considered in any patient with diffuse myalgias, muscle tenderness or weakness, and/or marked elevation of CPK. Patients should be advised to report promptly unexplained muscle pain, tenderness or weakness, particularly if accompanied by malaise or fever. **Pravastatin therapy should be discontinued if markedly elevated CPK levels occur or myopathy is diagnosed or suspected. Pravastatin therapy should also be temporarily withheld in any patient experiencing an acute or serious condition predisposing to the development of renal failure secondary to rhabdomyolysis, e.g., sepsis; hypotension; major surgery; trauma; severe metabolic, endocrine, or electrolyte disorders; or uncontrolled epilepsy.** The risk of myopathy during treatment with another HMG-CoA reductase inhibitor is increased with concurrent therapy with either erythromycin, cyclosporine, niacin, or fibrates. However, neither myopathy nor significant increases in CPK levels have been observed in three reports involving a total of 100 post-transplant patients (24 renal and 76 cardiac) treated for up to two years concurrently with pravastatin 10-40 mg and cyclosporine. Some of these patients also received other concomitant immunosuppressive therapies. In one single-dose study, pravastatin levels were found to be increased in cardiac transplant patients receiving cyclosporine. Further, in clinical trials involving small numbers of patients who were treated concurrently with pravastatin and niacin, there were no reports of myopathy. Also, myopathy was not reported in a trial of combination pravastatin (40 mg/day) and gemfibrozil (1200 mg/day), although 4 of 75 patients on the combination showed marked CPK elevations versus one of 73 patients receiving placebo. There was a trend toward more frequent CPK elevations and patient withdrawals due to musculoskeletal symptoms in the group receiving combined treatment as compared with the groups receiving placebo, gemfibrozil, or pravastatin monotherapy (see **PRECAUTIONS: Drug Interactions**). **The use of fibrates alone may occasionally be associated with myopathy. The combined use of pravastatin and fibrates should be avoided unless the benefit of further alterations in lipid levels is likely to outweigh the increased risk of this drug combination.**

PRECAUTIONS: General: Pravastatin may elevate creatinine phosphokinase and transaminase levels (see **ADVERSE REACTIONS**). This should be considered in the differential diagnosis of chest pain in a patient on therapy with pravastatin. *Homozygous Familial Hypercholesterolemia.* Pravastatin has not been evaluated in patients with rare homozygous familial hypercholesterolemia. In this group of patients, it has been reported that HMG-CoA reductase inhibitors are less effective because the patients lack functional LDL receptors. *Renal Insufficiency.* A single 20 mg oral dose of pravastatin was administered to 24 patients with varying degrees of renal impairment (as determined by creatinine clearance). No effect was observed on the pharmacokinetics of pravastatin or its 3α-hydroxy isomeric metabolite (SQ 31,906). A small increase was seen in mean AUC values and half-life ($t_{1/2}$) for the inactive enzymatic ring hydroxylation metabolite (SQ 31,945). Given this small sample size, the dosage administered, and the degree of individual variability, patients with renal impairment who are receiving pravastatin should be closely monitored. **Information for Patients:** Patients should be advised to report promptly unexplained muscle pain, tenderness or weakness, particularly if accompanied by malaise or fever. **Drug Interactions:** *Immunosuppressive Drugs, Gemfibrozil, Niacin (Nicotinic Acid), Erythromycin:* See **WARNINGS: Skeletal Muscle**. *Antipyrine:* Since concomitant administration of pravastatin had no effect on the clearance of antipyrine, interactions with other drugs metabolized via the same hepatic cytochrome isozymes are not expected. *Cholestyramine/Colestipol:* Concomitant administration resulted in an approximately 40 to 50% decrease in the mean AUC of pravastatin. However, when pravastatin was administered 1 hour before or 4 hours after cholestyramine or 1 hour before colestipol and a standard meal, there was no clinically significant decrease in bioavailability or therapeutic effect. (See **DOSAGE AND ADMINISTRATION: Concomitant Therapy**.) *Warfarin:* In a study involving 10 healthy male subjects given pravastatin and warfarin concomitantly for 6 days, bioavailability parameters at steady state for pravastatin (parent compound) were not altered. Pravastatin did not alter the plasma protein-binding of warfarin. Concomitant dosing did increase the AUC and Cmax of warfarin but did not produce any changes in its anticoagulant action (i.e., no increase was seen in mean prothrombin time after 6 days of concomitant therapy). However, bleeding and extreme prolongation of prothrombin time has been reported with another drug in this class. Patients receiving warfarin-type anticoagulants should have their prothrombin times closely monitored when pravastatin is initiated or the dosage of pravastatin is changed. *Cimetidine:* The $AUC_{0\text{-}12\,hr}$ for pravastatin when given with cimetidine was not significantly different from the AUC for pravastatin when given alone. A significant difference was observed between the AUC's for pravastatin when given with cimetidine compared to when administered with antacid. *Digoxin.* In a crossover trial involving 18 healthy male subjects given pravastatin and digoxin concurrently for 9 days, the bioavailability parameters of digoxin were not affected. The AUC of pravastatin tended to increase, but the overall bioavailability of pravastatin plus its metabolites SQ 31,906 and SQ 31,945 was not altered. *Cyclosporine:* Some investigators have measured cyclosporine levels in patients on pravastatin, and to date, these results indicate no clinically meaningful elevations in cyclosporine levels. In one single-dose study, pravastatin levels were found to be increased in cardiac transplant patients receiving cyclosporine. *Gemfibrozil:* In a crossover study in 20 healthy male volunteers given concomitant single doses of pravastatin and gemfibrozil, there was a significant decrease in urinary excretion and protein binding of pravastatin. In addition, there was a significant increase in AUC, Cmax, and Tmax for the pravastatin metabolite SQ 31,906. Combination therapy with pravastatin and gemfibrozil is generally not recommended. In interaction studies with *aspirin, antacids* (1 hour prior to PRAVACHOL), *cimetidine, nicotinic acid,* or *probucol,* no statistically significant differences in bioavailability were seen when PRAVACHOL (pravastatin sodium) was administered. *Other Drugs:* During clinical trials, no noticeable drug interactions were reported when PRAVACHOL was added to: diuretics, antihypertensives, digitalis, ACE inhibitors, calcium channel blockers, beta-blockers, or nitroglycerin. **Endocrine Function:** HMG-CoA reductase inhibitors interfere with cholesterol synthesis and lower circulating cholesterol levels and, as such, might theoretically blunt adrenal or gonadal steroid hormone production. Results of clinical trials with pravastatin in males and post-menopausal females were inconsistent with regard to possible effects of the drug on basal steroid hormone levels. In a study of 21 males, the mean testosterone response to human chorionic gonadotropin was significantly reduced ($p < 0.004$) after 16 weeks of treatment with 40 mg of pravastatin. However, the percentage of patients showing a ≥ 50% rise in plasma testosterone after human chorionic gonadotropin stimulation did not change significantly after therapy in these patients. The effects of HMG-CoA reductase inhibitors on spermatogenesis and fertility have not been studied in adequate numbers of patients. The effects, if any, of pravastatin on the pituitary-gonadal axis in pre-menopausal females are unknown. Patients treated with pravastatin who display clinical evidence of endocrine dysfunction should be evaluated appropriately. Caution should also be exercised if an HMG-CoA reductase inhibitor or other agent used to lower cholesterol levels is administered to patients also receiving other drugs (e.g., ketoconazole, spironolactone, cimetidine) that may diminish the levels or activity of steroid hormones. **CNS Toxicity:** CNS vascular lesions, characterized by perivascular hemorrhage and edema and mononuclear cell infiltration of perivascular spaces, were seen in dogs treated with pravastatin at a dose of 25 mg/kg/day, a dose that produced a plasma drug level about 50 times higher than the mean drug level in humans taking 40 mg/day. Similar CNS vascular lesions have been observed with several other drugs in this class. A chemically similar drug in this class produced optic nerve degeneration (Wallerian degeneration of retinogeniculate fibers) in clinically normal dogs in a dose-dependent fashion starting at 60 mg/kg/day, a dose that produced mean plasma drug levels about 30 times higher than the mean drug level in humans taking the highest recommended dose (as measured by total enzyme inhibitory activity). This same drug also produced vestibulocochlear Wallerian-like degeneration and retinal ganglion cell chromatolysis in dogs treated for 14 weeks at 180 mg/kg/day, a dose which resulted in a mean plasma drug level similar to that seen with the 60 mg/kg/day dose. **Carcinogenesis, Mutagenesis, Impairment of Fertility:** In a 2-year study in rats fed pravastatin at doses of 10, 30, or 100 mg/kg body weight, there was an increased incidence of hepatocellular carcinomas in males at the highest dose ($p < 0.01$). Although rats were given up to 125 times the human dose (HD) on a mg/kg body weight basis, serum drug levels were only 6 to 10 times higher than those measured in humans given 40 mg pravastatin as measured by AUC. The oral administration of 10, 30, or 100 mg/kg (producing plasma drug levels approximately 0.5 to 5.0 times the human drug levels at 40 mg) of pravastatin to mice for 22 months resulted in a statistically significant increase in the incidence of malignant lymphomas in treated females when all treatment groups were pooled and compared to controls ($p < 0.05$). The incidence was not dose-related and male mice were not affected. A chemically similar drug in this class was administered to mice for 72 weeks at 25, 100, and 400 mg/kg body weight, which resulted in mean serum drug levels approximately 3, 15, and 33 times higher than the mean human serum drug concentration (as total inhibitory activity) after a 40 mg oral dose. Liver carcinomas were significantly increased in high-dose females and mid- and high-dose males, with a maximum incidence of 90 percent in males. The incidence of adenomas of the liver was significantly increased in mid- and high-dose females. Drug treatment also significantly increased the incidence of lung adenomas in mid- and high-dose males and females. Adenomas of the eye Harderian gland (a gland of the eye of rodents) were significantly higher in high-dose mice than in controls. No evidence of mutagenicity was observed *in vitro*, with or without rat-liver metabolic activation, in the following studies: microbial mutagen tests, using mutant strains of *Salmonella typhimurium* or *Escherichia coli*; a forward mutation assay in L5178Y TK +/- mouse lymphoma cells; a chromosomal aberration test in hamster cells; and a gene conversion assay using *Saccharomyces cerevisiae*. In addition, there was no evidence of mutagenicity in either a dominant lethal test in mice or a micronucleus test in mice. In a study in rats, with daily doses up to 500 mg/kg, pravastatin did not produce any adverse effects on fertility or general reproductive performance. However, in a study with another HMG-CoA reductase inhibitor, there was decreased fertility in male rats treated for 34 weeks at 25 mg/kg body weight, although this effect was not observed in a subsequent fertility study when this same dose was administered for 11 weeks (the entire cycle of spermatogenesis, including epididymal maturation). In rats treated with this same reductase inhibitor at 180 mg/kg/day, seminiferous tubule degeneration (necrosis and loss of spermatogenic epithelium) was observed. Although not seen with pravastatin, two similar drugs in this class caused drug-related testicular atrophy, decreased spermatogenesis, spermatocytic degeneration, and giant cell formation in dogs. The clinical significance of these findings is unclear. **Pregnancy: Pregnancy Category X.** See **CONTRAINDICATIONS**. Safety in pregnant women has not been established. Pravastatin was not teratogenic in rats at doses up to 1000 mg/kg daily or in rabbits at doses of up to 50 mg/kg daily. These doses resulted in 20x (rabbit) or 240x (rat) the human exposure based on surface area (mg/meter^2). However, in studies with another HMG-CoA reductase inhibitor, skeletal malformations were observed in rats and mice. There has been one report of severe congenital bony deformity, tracheo-esophageal fistula, and anal atresia (Vater association) in a baby born to a woman who took another HMG-CoA reductase inhibitor with dextroamphetamine sulfate during the first trimester of pregnancy. PRAVACHOL (pravastatin sodium) should be administered to women of child-bearing potential only when such patients are highly unlikely to conceive and have been informed of the potential hazards. If the woman becomes pregnant while taking PRAVACHOL (pravastatin sodium), it should be discontinued and the patient advised again as to the potential hazards to the fetus. **Nursing Mothers:** A small amount of pravastatin is excreted in human breast milk. Because of the potential for serious adverse reactions in nursing infants, women taking PRAVACHOL should not nurse (see **CONTRAINDICATIONS**). **Pediatric Use:** Safety and effectiveness in individuals less than 18 years old have not been established. Hence, treatment in patients less than 18 years old is not recommended at this time.

ADVERSE REACTIONS: Pravastatin is generally well tolerated; adverse reactions have usually been mild and transient. In 4-month long placebo-controlled trials, 1.7% of pravastatin-treated patients and 1.2% of placebo-treated patients were discontinued from treatment because of adverse experiences attributed to study drug therapy; this difference was not statistically significant. In long-term studies, the most common reasons for discontinuation were asymptomatic serum transaminase increases and mild, non-specific gastrointestinal complaints. During clinical trials the overall incidence of adverse events in the elderly was not different from the incidence observed in younger patients. **Adverse Clinical Events:** All adverse clinical events (regardless of attribution) reported in more than 2% of pravastatin-treated patients in the placebo-controlled trials are identified in the table below; also shown are the percentages of patients in whom these medical events were believed to be related or possibly related to the drug:

	All Events		Events Attributed to Study Drug	
Body System/Event	**Pravastatin (N = 900) %**	**Placebo (N = 411) %**	**Pravastatin (N = 900) %**	**Placebo (N = 411) %**
Cardiovascular				
Cardiac Chest Pain	4.0	3.4	0.1	0.0
Dermatologic Rash	4.0*	1.1	1.3	0.9
Gastrointestinal				
Nausea/Vomiting	7.3	7.1	2.9	3.4
Diarrhea	6.2	5.6	2.0	1.9
Abdominal Pain	5.4	6.9	2.0	3.9
Constipation	4.0	7.1	2.4	5.1
Flatulence	3.3	3.6	2.7	3.4
Heartburn	2.9	1.9	2.0	0.7
General				
Fatigue	3.8	3.4	1.9	1.0
Chest Pain	3.7	1.9	0.3	0.2
Influenza	2.4*	0.7	0.0	0.0
Musculoskeletal				
Localized Pain	10.0	9.0	1.4	1.5
Myalgia	2.7	1.0	0.6	0.0
Nervous System				
Headache	6.2	3.9	1.7*	0.2
Dizziness	3.3	3.2	1.0	0.5
Renal/Genitourinary				
Urinary Abnormality	2.4	2.9	0.7	1.2
Respiratory				
Common Cold	7.0	6.3	0.0	0.0
Rhinitis	4.0	4.1	0.1	0.0
Cough	2.6	1.7	0.1	0.0

*Statistically significantly different from placebo.

In the Pravastatin Primary Prevention Study (West of Scotland Coronary Prevention Study) (see **CLINICAL PHARMACOLOGY: Clinical Studies**) involving 6595 patients treated with PRAVACHOL (pravastatin sodium) (N = 3302) or placebo (n = 3293) the adverse event profile in the pravastatin group was comparable to that of the placebo group over the median 4.8 years of the study. The following effects have been reported with drugs in this class, not all the effects listed below have necessarily been associated with pravastatin therapy: *Skeletal:* myopathy, rhabdomyolysis, arthralgia. *Neurological:* dysfunction of certain cranial nerves (including alteration of taste, impairment of extra-ocular movement, facial paresis), tremor, vertigo, memory loss, paresthesia, peripheral neuropathy, peripheral nerve palsy, anxiety, insomnia, depression. *Hypersensitivity Reactions:* An apparent hypersensitivity syndrome has been reported rarely which has included one or more of the following features: anaphylaxis, angioedema, lupus erythematous-like syndrome, polymyalgia rheumatica, dermatomyositis, vasculitis, purpura, thrombocytopenia, leukopenia, hemolytic anemia, positive ANA, ESR increase, eosinophilia, arthritis, arthralgia, urticaria, asthenia, photosensitivity, fever, chills, flushing, malaise, dyspnea, toxic epidermal necrolysis, erythema multiforme, including Stevens-Johnson syndrome. *Gastrointestinal:* pancreatitis, hepatitis, including chronic active hepatitis, cholestatic jaundice, fatty change in liver, and, rarely, cirrhosis, fulminant hepatic necrosis, and hepatoma; anorexia, vomiting. *Skin:* alopecia, pruritus. A variety of skin changes (e.g., nodules, discoloration, dryness of skin/mucous membranes, changes to hair/nails) have been reported. *Reproductive:* gynecomastia, loss of libido, erectile dysfunction. *Eye:* progression of cataracts (lens opacities), ophthalmoplegia. *Laboratory Abnormalities:* elevated transaminases, alkaline phosphatase, and bilirubin; thyroid function abnormalities. **Laboratory Test Abnormalities:** Increases in serum transaminase (ALT, AST) values and CPK have been observed (see **WARNINGS**). Transient, asymptomatic eosinophilia has been reported. Eosinophil counts usually returned to normal despite continued therapy. Anemia, thrombocytopenia, and leukopenia have been reported with HMG-CoA reductase inhibitors. **Concomitant Therapy:** Pravastatin has been administered concurrently with cholestyramine, colestipol, nicotinic acid, probucol and gemfibrozil. Preliminary data suggest that the addition of either probucol or gemfibrozil to therapy with lovastatin or pravastatin is **not** associated with greater reduction in LDL-cholesterol than that achieved with lovastatin or pravastatin alone. No adverse reactions unique to the combination or in addition to those previously reported for each drug alone have been reported. Myopathy and rhabdomyolysis (with or without acute renal failure) have been reported when another HMG-CoA reductase inhibitor was used in combination with immunosuppressive drugs, gemfibrozil, erythromycin, or lipid-lowering doses of nicotinic acid. Concomitant therapy with HMG-CoA reductase inhibitors and these agents is generally not recommended. (See **WARNINGS: Skeletal Muscle** and **PRECAUTIONS: Drug Interactions**.)

OVERDOSAGE: To date, there are two reported cases of overdosage with pravastatin, both of which were asymptomatic and not associated with clinical laboratory abnormalities. If an overdose occurs, it should be treated symptomatically and supportive measures should be instituted as required.

CAUTION: Federal (USA) law prohibits dispensing without prescription.

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FREER GALLERY OF ART: A young Japanese crane preens as he steps through a marshy field of ripe rice in this striking painting by Ozawa Nankoku. The hanging scroll, which dates from before 1897, was rendered in ink and color on silk in a realistic style unusual for its time. The work is featured in "Japanese Arts of the Meiji Era (1868-1912)," on view through April 26, 1998.

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ANACOSTIA MUSEUM

Museum Reopening The museum will reopen on December 14.

HEYE CENTER, NATIONAL MUSEUM OF THE AMERICAN INDIAN
[NEW YORK CITY]

To Honor and Comfort: Native Quilting Traditions (through January 4, 1998) Exhibition of quilts demonstrates the cultural and economic significance of quiltmaking in tribal communities.

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Martin Gilbert: A History of the 20th Century (November 5; 6 P.M.) Lecture by the renowned historian.
Footnotes, with Tommy Tune (November 10; 8 P.M.) The Tony Award-winning dancer and choreographer reminisces about his career.
Dinosaurs of the Gobi (November 21; 6 P.M.) Dr. Michael Novacek of New York's American Museum of Natural History shares his team's dramatic findings of dinosaur fossils.

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- Fresno, California (November 22-January 4, 1998) *Full Deck Art Quilts*, Fresno Art Museum.

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Mustangs *on the move*

WITHOUT FREE-ROAMING BANDS OF WILD HORSES, THE AMERICAN WEST JUST WOULDN'T BE THE SAME

BY YVA MOMATIUK ▪ PHOTOGRAPHS BY YVA MOMATIUK & JOHN EASTCOTT

I PANICKED AS SOON AS I HEARD him crashing through the brush. Cold and tired after tracking wild horses all day in the rugged high country of Wyoming and Montana, I had taken refuge from the wind in a dark spruce thicket where somehow the stallion detected me. Now it was all happening so quickly I didn't have time to think, but I knew his mares were hidden nearby, he was determined to protect them and I was in imminent danger of being trampled to death. He exploded out of the shadows and slid to a halt just inches away. He inhaled my scent, blew out noisily—and, inexplicably, backed off. Then I realized what had saved me. He recognized my smell.

For nearly three years, my husband, John Eastcott, and I had been following and photographing the mustangs of the American West, and that young stallion, one of about 120 animals on the Pryor Mountain Wild Horse Range, came of age on our watch. Two summers earlier, I used to trail behind his first harem of mares and foals. The animals were so skittish at first that I had to keep my distance. Later, as they became more accustomed to my presence, I began to crawl to within a few yards of the band. But that proximity required me to be especially cautious. To remove a blade of grass in front of my camera lens, I had to slowly bend it with my fingertips rather than pull or break it.

It was a motley group: an old mare with a pencil-shaped blaze and mouse-colored body whose broken hip had mended crookedly, her yearling colt, another youngster whose mother was missing and a couple of fillies. Nervous and unsure of his new status, the young stud seldom slept for long, but after each nap he would elegantly arch his neck and stretch a hind leg to align every little ten-

In Montana, at the Pryor Mountain Wild Horse Range, bachelor stallions make good use of a meadow bursting with fresh lupine blossoms—as an arena for a play fight.

At Pryor Mountain, a stallion called Baryshnikov (above) charges to defend "his" clump of prickly thistles, a delicacy for him; a palomino yearling plays with a young foal (right). At the Red Desert, a family band (opposite), glossy in their summer coats, wait patiently for their turn at the only water hole in the area. The band's stallion has determined their place in line—behind bands with more assertive studs, ahead of bachelors and lone old stallions.

don and muscle down to the gracefully pointing hoof. I called him Baryshnikov.

In time, the two of us developed a useful body code. If I came too close, he would raise his head and move toward me menacingly. I would step back, and if he was satisfied, he would turn away. At other times, he would look squarely into my eyes as if to ask: "What do you want?" He seemed curious and intelligent, and I spent so much time following him that my husband used to joke about losing his wife to a wild stud.

Baryshnikov endured my presence with a patience that is typical of wild stallions. Once they acquire mates, mustang studs must act as sentries, bodyguards and sensitive suitors. Tense and covered with scars of fierce battles, they discipline youngsters and enforce the unity of the band. But even the strongest and most alert stallion is easily replaced. He may break a leg, sicken or die.

Mustangs have come to occupy a special place in the collective American psyche. They symbolize much that has been lost to progress—wide-open spaces, self-sufficiency and a sense of unabridged freedom. They also comprise a fascinating chapter in the story of the modern horse, whose ancestors evolved here and then migrated over the Bering land bridge to Asia, Africa and Europe. Some 10,000-12,000 years ago horses disappeared from this continent, but in the early 1500s, Spanish colonists reintroduced them. Many of those animals escaped, forming the original nucleus of the herds roaming the West today.

Over the years, these herds provided Native American tribes, the U.S. cavalry and cowboys with countless sturdy mounts. But hundreds of thousands of wild horses were also slaughtered for pet food. The methods used to capture them were often ingenious but so inhumane that a widespread movement to stop the killing resulted in the passage, in 1971, of the federal Wild Free-Roaming Horse and Burro Act. By then, the horse population had plummeted from more than a million at the turn of the century to perhaps as few as 20,000. Today about

In midwinter at the Red Desert, wranglers corral mustangs. The wild horse population increases 15-20 percent a year, so the Bureau of Land Management conducts periodic roundups to prevent overgrazing. Both the roundups and the BLM's adoption program are controversial.

At Pryor Mountain, winter storms with subfreezing temperatures, snow and ice can be especially severe for small foals, lactating mares, and weaker or older animals. In the winter of 1977-78, sheet ice blocked access to forage and water. More than half the mustangs died.

40,000 mustangs live on public lands in nine Western states.

What good are they? Well, they're a living lesson in social organization and animal psychology, unhampered by breeders' needs for conformation, color and behavior. In their remote habitat, they undergo the laws of natural selection, form families and friendships, fight, play, care for each other. Contrary to assertions that they are inbred, sickly and ugly, most are robust and handsome. Their bones are dense and strong; their hooves require no trimming; they survive on sparse desert grasses and shrubs despite drought, famine and teeth-cracking cold. They can teach us a lot, for their domesticated kin have lost many of their natural traits. The very sight of them gives us the thrill of watching big animals superbly adapted to their harsh environment.

At present, mustang herds are growing at a rate of 15-20 percent a year. To protect against overgrazing, the Interior Department's Bureau of Land Management (BLM), which administers most of the rangeland occupied by wild horses, carries out periodic roundups. Over the years, the agency has offered nearly 155,000 surplus animals for public adoption. Although many adoptions work out well, some do not. Moreover, animal-rights groups contend that, due to abuses of the program, many horses still end up at slaughterhouses.

In our quest to document the mustangs' lives, we've roamed the high plateau of Wyoming's vast Red Desert as well as the Pryor Mountain range. The Red Desert bands can be quite large, sometimes containing 20 to 40 horses, including several stallions competing for dominance.

In the summer, after the intense desert heat drained seasonal creeks, we frequently spent our nights camped near water holes, watching for the horses to come to drink. Bachelor bands and harems led by timid studs lined up to wait their turns while dominant stallions pranced forward to serve themselves first. After slurping their fill, the big guys rolled

in the mud and shook themselves like dogs to relieve the itch of insect bites. The mares drank next, while their foals watched; the foals get moisture by drinking their mothers' rich milk.

Like people, horses have their peculiar ways, and it takes a while to learn what they are. We eventually discovered, for example, that once our scent became familiar, some mustangs would let us approach them even after a long absence. First, though, we had to reintroduce ourselves by urinating on "stallion piles." These are huge deposits of stud dung that stallions frequently use, and inspect with intense curiosity.

An ordinary day in the life of a wild horse is filled with peaceful grazing, loafing and socializing. Yet at times, high drama occurs. One fine summer day, my husband and I returned to Pryor Mountain, which rises like a huge whale of rocks from the Bighorn River Basin, to discover several bands in a meadow on the summit. At first glance, all seemed well, but then I noticed the stallion called Raven taking his band over the hill toward water, and accidentally leaving his lead mare behind. She was fast asleep, flanked by her two foals.

When the mare awoke, she found herself alone and unprotected. Alarmed, she trotted about in small circles. Her distress calls excited several nearby studs who, fired by the hormonal surge of the breeding season, attempted to abduct her. She wheeled, screamed and kicked while her terrified foals ran around helplessly.

Suddenly a black stallion appeared on the hill above, running like the wind. It was Raven. One after another, he drove the other stallions away. When he finally reached the mare, she unexpectedly gave him a wallop with her hooves, as if to say, "Where were you when I needed you?" Then they calmly trotted off side by side, followed by their tired foals.

On midsummer afternoons, mustangs often meander to hilltops to escape pesky insects and to cool off in the breeze. But they risk another danger there—lightning.

Though new Globe audiences occasionally display Elizabethan-style raucousness, these playgoers are respectfully attentive during a performance of *The Winter's Tale*. The watercolor opposite is based on a 1638 engraving of the Globe theater.

The Rebirth of Shakespeare's Globe

It took an American actor to champion the rebuilding of a British cultural symbol

BY RICHARD COVINGTON

UNDER A CLOUDLESS, INKY SKY in London, Valentine, friend of Proteus, the distinctly ungentlemanly gentleman in William Shakespeare's comedy *The Two Gentlemen of Verona*, was begging Julia to forgive Proteus for his infidelities. The sold-out audience of 1,500 inside the new Globe theater heaved a collective sigh of disgust. The couple expected to kiss and make up amid audience laughter, but the spectators had other ideas.

Suddenly, a voice from the standing crowd blurted out: "Don't do it, Julia." The actors stopped dead. In the intimacy of the open-air theater, this impassioned cry from the audience was like having an unexpected player thrust on stage—one incensed enough to rewrite the ending.

"Instead of comic relief, I felt a shiver run up my back, like I was in the presence of a lynch mob," explained Mark Rylance, the Proteus character and the Globe's 37-year-old artistic director. "When Julia said she'd take Proteus back, in determined opposition to audience wishes, there was no laughter at all. Their reaction was the absolute opposite of what we expected."

Shakespeare and the late Sam Wanamaker, coproducers of the show, must have been smiling in the wings. Once more, a Globe audience had tossed a wrench in the theatrical works.

After an absence of nearly 400 years, Shakespeare's Globe theater rises again on the South Bank of the Thames River, 200 yards from its original 1599 site. Awakening this Sleeping Beauty, the jewel in the crown of Elizabethan theater, took 27 years, only a few years less than the Wars of the Roses. The marathon campaign to resurrect the "Wooden O"—as Shakespeare called it in *Henry V*—has been an epic adventure of

PHOTOGRAPHS BY JULIAN NIEMAN

dreams and disasters, fundraising nightmares, lawsuits and nitpicky scholarly debate. The efforts of the star of the drama, Sam Wanamaker (right), an actor, producer, and director of stage and screen, were variously branded by the project's numerous critics as crackpot, elitist, fast-buck or, more simply, flat-out impossible.

Following a "prologue" run in 1996, the Globe's first season opened last June with a nostalgic production of *Henry V* directed by a young man named Olivier. Laurence Olivier won international recognition directing himself in the 1945 film of *Henry V*; this time, his 36-year-old son, Richard, directed Rylance as the warrior king in the first play of the four-play season that ran through September.

Authentically re-created from extensive scholarly and archaeological evidence, the Globe is once again the Bard's theater. Using Elizabethan building techniques, the theater was constructed as a 20-sided polygon, 100 feet in diameter and 45 feet high, with whitewashed, half-timber walls and a thatched roof crown. Inside, three tiers of wooden benches surround an open yard and platform thrust stage.

Within the roofless theater, plays are staged in much the same way as when Shakespeare's troupe produced them—without sets, decor, microphones or spotlights, or any of the techno-wizardry and theatrical prestidigitation now standard in even the most low-budget West End musical. The sole concession is a bank of floodlights to replicate daylight for evening productions.

Performing in the new Globe has been a revelation to the actors. "It was like going to the moon, taking off your helmet and suddenly realizing there was no air," joked Lennie James, who played Valentine in last year's production of *Two Gentlemen*. "When the audience came in, all our rehearsal preparation seemed irrelevant. I have never performed in any play where the audience became so vocally and physically involved."

Sam Wanamaker starred with Ingrid Bergman in *Joan of Lorraine* in 1946.

"The audience more or less took over the production," added Andrew Gurr, one of the Globe's consulting scholars and a professor at the University of Reading. "And the actors ignore them at their peril." In this theater, actors need the honed reflexes of a stand-up comedian; the ability to catch audience banter from out of left field and instantly incorporate it into the action.

During the *Two Gentlemen of Verona* performances, nothing derailed the play; not rain, loquacious tour guides, noisy helicopters and airplanes flying overhead, or kids tossing sandwiches onto the stage.

The Globe itself is just the first phase of an ambitious $45 million center that will include a multimedia resource library, exhibition and education complex, a restaurant, shops and a 300-seat indoor theater, a replica of a 1617 design. The entire project is scheduled for completion in 1999. Prices have gone up a bit since the original Globe was built; in 1599, the cost of construction was about $900.

Already more than 300,000 visitors—40 percent of them from the United States—have toured a historical exhibition at Shakespeare's Globe, viewed a play on its stage or participated in workshops that expose students from all over the world to the works of the Bard.

The stage may be Elizabethan-Jacobean retro, but the selling of the theater is thoroughly cyber-friendly. Photographs of the building, performances and architectural models are posted on the Internet along with historical tidbits, news bulletins, and instructions on how to sponsor a seat. A more elaborate virtual reality Internet tour is in the works.

Rebuilding the Globe theater has been a stunningly quixotic endeavor and must be one of the longest-running sagas of stalled hopes in theater history. A throng of Globe-style theaters has sprung up in such unlikely places as Tokyo; San Diego; Odessa, Texas; and Bremen, Germany. The Folger Shakespeare Library in Washington, D.C. has its own indoor version. Logically, London should have had its Globe ages ago.

Paradoxically, the city that spawned the Globe seemed the least interested in having another take its place. It took the American Wanamaker with American financial backers to wheedle and cajole the British into rebuilding what is one of the most indelible symbols of British culture.

As doggedly persistent as Henry V and as smoothly persuasive as Iago, Wanamaker, who died in 1993, continues to cast a spell over those he converted to the cause. Coaxed to sign on as official patron of Wanamaker's crusade in 1982, Prince Philip once joked to an audience at the unfinished site, "When Sam twisted an arm, he did it properly. I certainly got my arm in a sling ever after."

In addition to corralling Prince Philip and his son Prince Edward, Wanamaker persuaded Lord Olivier, Sir John Gielgud, Sir Peter Hall, Michael Caine, Anthony Hopkins,

Skills and crafts dating from the 16th century are part of the new Globe (clockwise, from top right): embroidered wall hangings; half-timber walls; thatched roof; wrought-iron gates; and mortise-and-tenon joinery.

Diana Rigg, Franco Zeffirelli and others to lend their clout to his crusade. The late Armand Hammer, Gordon Getty, Samuel Scripps, the Ambassador Foundation, the Kresge Foundation and the Ford Motor Company were among prominent donors from the American business community.

Sometimes called Wanamaker's folly, the Globe project has been controversial from the beginning. Critics lambasted it as an American fast-buck scheme, a sort of Shakespeare goes to Disneyland. A leftist borough council in London rejected the project as elitist and tried to stop it. After nearly two years in legal limbo, Wanamaker won his case against the borough council in 1986.

Others reasonably argued that London's infamously temperamental weather would make it impossible to hold regular performances in a theater open to the elements. Even the Globe's strongest supporters insisted the plays would have to be cut drastically; the "groundlings," the 500 spectators standing at the foot of the stage, would never be able to last four hours for the traditional version of *Hamlet*, they maintained.

To allay fears of creating a Shakespearean Disneyland, a slew of dedicated scholars, master carpenters and theater professionals have labored long and hard, and much of the time without pay, to ensure that the Globe steers clear of sliding into Elizabethan kitsch. "This isn't a model, like a scale model of Drake's ship the *Golden Hind*," Rylance insisted. "This is a boat that could actually cross the Atlantic."

As to the inclement weather question, the groundlings don't seem to mind the rain; very few of them leave. The actors say that the audiences actually seem to concentrate better in bad weather.

Initially wary of the project, Sir Peter Hall, a member of the Globe's board of trustees and a pillar of British theater, is one of Wanamaker's hard-won converts. "Sam's dream was that we try to understand what Shakespeare was all about in his own theater," Sir Peter explained. "The essence of Shakespeare's drama is live interaction with a packed audience in a very small space in daylight, challenged to use their imaginations. There's nowhere else in Britain where that's happening."

Adds Globe architect Jon Greenfield, "One of our goals in reconstructing the Globe follows the concept of playing Bach on original period instruments. The listener finds out more about the music and how it was intended to sound. Seeing Shakespeare performed in the theater for which it was originally written will reveal even more about the text."

Henry V's muse of fire may ignite imaginations, but the muse of funding has had her hands full persuading potential donors to ignore Polonius' advice and enthusiastically generous lenders be.

"It's a continuing irritant, this resentment that an American should be championing the cause of Shakespeare and establishing an interna-

The Globe's projecting stage, with its faux marble pillars and elaborately decorated walls and ceiling, allows *Henry V* to be performed as the Bard intended.

tional resource in the playwright's name," Wanamaker complained in an interview shortly before his death.

After decades of lukewarm financial support, the Arts Council of Britain finally earmarked an $18.6 million grant from the proceeds of the National Lottery in October 1995 for project construction. The $1.5 million yearly operating costs for the play season are paid through ticket sales and admission receipts from the Globe's historical exhibition, said Rylance. But the project still needs to raise some $10 million from private sources.

In a far-reaching international appeal, the Globe created a network of 321 high school sponsors in 31 countries to raise funds through local productions. The schools have chipped in $165,000.

That Wanamaker, the son of an immigrant Russian garment worker in Chicago, could succeed where better-positioned backers failed is nothing short of miraculous. In their time, the poet Coleridge, novelist Thackeray, impresario David Garrick, even King George IV, attempted to resurrect the theater.

Wanamaker first came up with the idea of rebuilding the Globe in 1949, when he was in London to shoot a film. Like legions of aspiring actors before him, Wanamaker's earliest recollection of a play was Shakespeare—*King Lear* in Yiddish, no less. He felt indebted to the playwright who played a role in launching his career in theater and film. He had long been curious about the location of the original site of the Globe, and after a search in a dangerous, decrepit section of London, Wanamaker found himself peering at a sooty plaque on a brewery wall. He was appalled. The upstart Yank tried to drum up interest in rebuilding the Globe, but after two decades of failing to arouse any interest, Wanamaker decided to spearhead the thing himself.

In 1970, Wanamaker started the Globe Playhouse Trust to raise funds. He invested his own money and promised himself that at the first obstacle he encountered he would drop the project. Fortunately for the Globe, he ignored his own advice.

In 1972, he purchased an old coffee-grinding factory near the original Globe site and set up the vest-pocket Bear Gardens Museum (named for the bearbaiting pit that once stood there) as a showcase promoting the nascent Globe.

Since the original Globe site was already occupied by a functioning brewery and a historically protected Georgian-era building, Wanamaker had to cast about for another location for the proposed theater. After years of acrimonious negotiations with various property developers and a lawsuit with the local council, he emerged with a 1.2-acre site on a street-maintenance storage yard not very far from from the site of the original Globe. Construction started on the new Globe in 1989.

Since no detailed plans of the original Globe survived, architects and scholars worked in a void—in spite of the vast reams of speculation churned

In *The Winter's Tale*, one of two plays that marked the official opening season of the new Globe, the stage was covered with clay, and actors Mark Lewis Jones (Leontes) and Joy Richardson (Paulina) were costumed in nontraditional attire.

out about the shape of the theater. Fortunately, meticulous perspective drawings of the neighborhood in the early 1600s give a close approximation of the theater's exterior. For the interior, the architects depended on sophisticated guesswork and plans from similar theaters, classical models by the Roman architect Vitruvius in vogue at the time, and patchy archaeological finds from the old Globe and the nearby Rose Theatre.

Nearly every aspect of the design was up for grabs. Should the tiring-house be inside or outside the "O"? Outside, it was decreed by scholarly councils. Should the stage be oriented to put audiences or actors in the shade? Actors, because it's more important that they don't squint into the sun, and it was the orientation of the original theater. Should the stage be rectangular or tapered at the front? Actors argued for tapered, claiming the rectangular stage was awkward for performances. But Peter Street, the original carpenter, surely used the more symmetrical rectangle, countered the builders. Architects and academics won the day.

Days, if not weeks, were spent deciding crucial minutiae such as how high the stage balcony should be. Massive pillars supporting the roof would dwarf anything lower than ten feet, argued some. But if the balcony was more than nine feet high, Romeo would have a tough time scrambling up to give Juliet a kiss, others protested. Nine feet it would be.

In a phenomenally painstaking process, the builders labored to replicate the wood-frame structure using the same carpentry techniques as the Elizabethan builders, from turning the balusters to thatching the roof by hand. Like the original Globe, the half-timber building is covered with several coats of a plaster mixture of lime, sand and animal hair.

The English oak timbers were cut green and joined together so that they will season into one another. "The joints are so tight a cigarette paper couldn't slide through them," boasted architect Greenfield.

In addition to the cost and labor that went into building the theater structure itself, a large chunk of money was poured straight into the ground, unseen and certainly unsexy for fundraising purposes. Nearly $2 million went into sinking a curtain wall nearly 1,000 feet long to block seepage from the Thames River, just 65 feet away.

The stage is five feet above ground level to permit the summoning forth of demons and ghosts from a spacious underworld. A pair of wooden pillars, painted to look like marble, supports the indigo blue heavens, studded with gilt stars and crescent moons. Behind the stage is the much-disputed balcony and colonnade elaborately carved with mythological figures. A gabled roof above the balcony holds equipment for lowering gods and spirits into the action—the deus ex machina, "god from the machine," of classical theater.

The interior sports the same kind of gaudy decorative paint job favored by decorators of the time, with the wooden figures and molding splashed with eye-jarring scarlet, egg-yolk yellow, and vermilion. "The Elizabethans were madmen for painting anything they could get a brush to," according to Greenfield.

The thatched roof is the first in London since a ban was imposed in the aftermath of the Great Fire of 1666 that leveled much of the city. To pass muster with the local fire department, the peaked water-reed thatch now

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sprouts a spiky row of sprinklers. Fire is no idle threat: the original Globe burned to the ground in 1613 after cannon wadding discharged during a performance of *Henry VIII* ignited the roof. A second Globe was built on the same site within a year.

The new Globe can seat about 1,500—with 500 on the ground and 1,000 on the tiered benches. In Shakespeare's day, when people were physically smaller and audiences more accustomed to jostling together, twice as many spectators could squeeze into the theater's narrow confines.

In 1599, when the first trumpet blared forth to announce the premiere season of the original Globe, filthy, clamorous, magnificent London was on its way to becoming the largest city in Europe. The Globe neighborhood of Southwark was among the burgeoning metropolis's wilder and more incorrigible places, a shanty-town bursting at the seams with famous pubs and infamous brothels—the ideal spot for theaters. Petrified at the prospect of allowing the corrupting playhouses in their midst, city fathers banished them to this backwater bedlam.

"Plays make plague," bleated antagonistic churchmen wary their flocks might flee their sermons for the subversive pleasures of the Globe and other theaters.

Fortunately, Queen Elizabeth and the Stuart kings James I and Charles I loved plays. "The best companies were always invited to perform for the monarch at Hampton Court for Christmas," Professor Gurr explained. "That was the excuse for allowing the players to stick around London the rest of the year."

Theatrically speaking, the joint was indeed jumping. Apart from Shakespeare, Christopher Marlowe, Ben Jonson, John Webster, Thomas Kyd and a host of lesser lights made their names as playwrights in the boom years of Elizabethan and Jacobean rule. In 1642, Oliver Cromwell's Puritans closed the whole thriving scene down with a self-righteous thud, and the gloriously vibrant playhouses suffered fates similar to that of the Globe, which was soon razed to make way for tenements.

Initially, the Globe was built out of desperation. In 1597, Shakespeare's company lost their lease from one theater and were blocked from occupying another by powerful neighbors intent on keeping out the rabble. Actor-manager Richard Burbage and his brother Cuthbert offered shares to Shakespeare and the other actors if they would chip in the cost of building the company a new home. With his one-eighth stake in the theater, Shakespeare, already comfortably well off, soon bowed out and retired to Stratford in 1610 to live the life of a country squire. When he died in 1616, the author of 38 plays and 154 sonnets was all of 52 years old.

According to one legend, company members spirited away the timbers of their old leased theater under cover of night for use in building the Globe. The indignant landlord promptly sued them. So with a shaky and experimental financial arrangement, the Globe faced its public.

None of this bothered audiences, who flocked to the Wooden O in droves, making it the most popular venue of its day. Ten percent of the city's population attended plays on a regular basis, according to Gurr.

Performing in the Globe was a free-for-all, a cross between acting in a goldfish bowl and playing a football match with words, words, words. The spectators became inextricably

The production of *Henry V* was pure Elizabethan; all the roles were played by male actors wearing period costumes, with the Globe's artistic director, Mark Rylance, as Henry V and Toby Cockerell portraying Princess Catherine.

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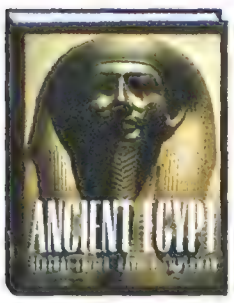

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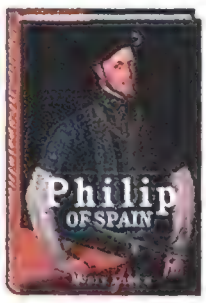

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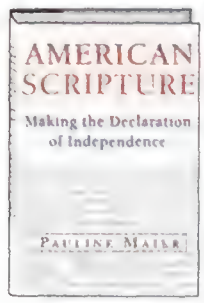

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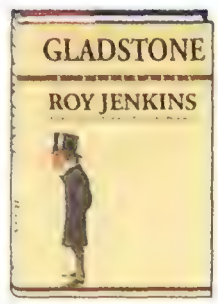

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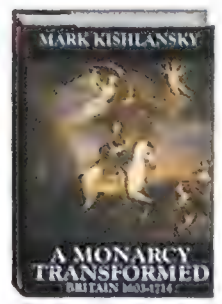

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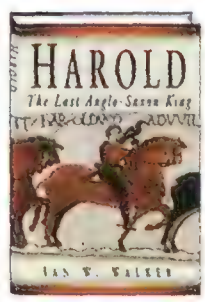

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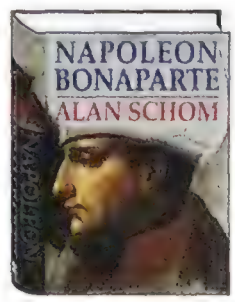

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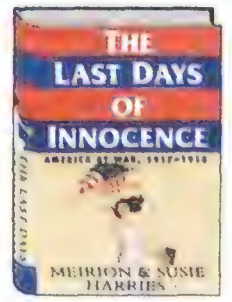

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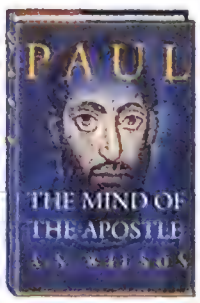

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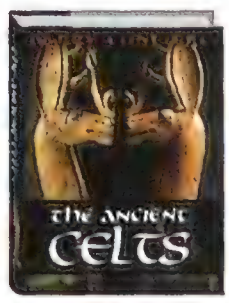

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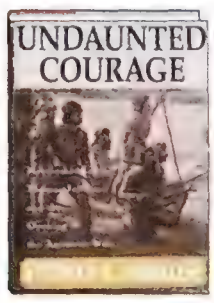

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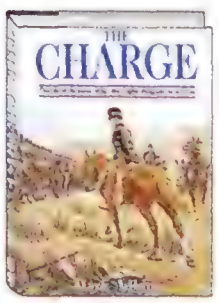

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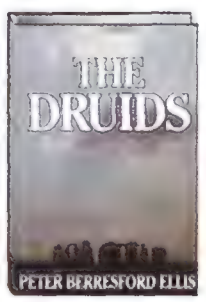

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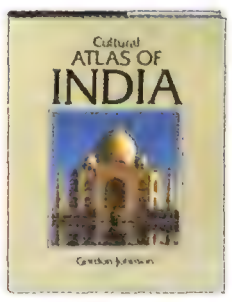

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The "Wooden O" and its thatched roof are clearly visible in an aerial view of the new Globe (left) built on the Thames across from St. Paul's Cathedral. The flagstone piazza (above), inscribed with donor names, has become a gathering spot for theatergoers.

wrapped up in the action. "In Hamlet's soliloquy, you knew damn well Hamlet wasn't alone," Gurr declared. "You could see a thousand people sitting or standing behind him. This completely altered the meaning of his speech, implicating the audience more closely than ever in his deeds."

The audiences were a fractious—and odoriferous—bunch. One delicate observer complained of "garlic-breathed stinkards" and of smokers puffing away on that foul weed newly imported from the New World, tobacco. Vendors hawking hazelnuts and jugs of ale elbowed their way through waiting audiences who gathered two hours before the 2 o'clock performances to drink, eat and carry on with friends. Pickpockets plied their trade, though at considerable risk; one account tells of a pickpocket who, caught red-handed, was tied to a post onstage and pelted with stones.

Contemporary Globe audiences may smell better than their Elizabethan counterparts, but judging from performances of *Two Gentlemen*, today's audiences take to the interaction as to the manner born, playing their role of histrionic chorus to the hilt.

"Just hanging onto the narrative took an immense effort," actor Aicha Kossoko explained at a rehearsal. "If the audience wasn't saying, 'Oh come on, give her a kiss,' they were booing and hissing at the sexual innuendos."

One actor needed to fill in as designated dramatic driver, holding tight to the narrative thread. "If everybody responded to the audience at the same time, all was lost," observed American actress Stephanie Roth.

As intimate as the theater is, projecting from the sprawling stage required phenomenal physical exertion. "When you first come on stage, you feel as if you're screaming at the top of your voice," said Lennie James. "But you're not at all; it's just the tremendous energy you're using that makes you think you are.

"People put their kids on the stage, bought pies during the performance, or put on their raincoats as it started to drizzle. After a while, I became inured to it all," said James.

The Globe will be very much an actors' theater, argued Rylance. "Actors will have to take more responsibility because the usual signposts—sets, lights, music and so forth—are gone." Born in England and raised in Milwaukee, Rylance got his first taste of the city's theater on summer school trips chaperoned by his teacher parents. After training at the Royal Academy for Dramatic Arts in London, he joined the Royal Shakespeare Company where he played Romeo, Hamlet and Ariel among other leading roles. In 1994, Rylance won an Olivier award for best actor as Benedick in *Much Ado About Nothing* at the West End playhouse.

As mild-mannered and reflective as Wanamaker was ebullient, Rylance became ensnared in the Globe's clutches in 1991 when he pleaded with Wanamaker for permission to perform *The Tempest* in the open-air construction site.

"My wife and I told him, 'We mortgaged our house to do this production. We have to get it out of our blood,'" Rylance remembered. "Sam's blue eyes twinkled like an Elizabethan actor-manager and he said, 'Yeah, sure—as long as it doesn't cost me anything.'"

Seeing a kindred self-sacrificing spirit, Wanamaker invited Rylance to

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sign on with the artistic board. In 1995, he was elected artistic director.

"Like Sam, I was always fascinated by the way theater companies are put together, how the work is affected by the management," Rylance explained. "Finding out about the kind of architecture the Burbages preferred is fascinating, but I also want to know how they managed the theater."

The artistic director intends to stage plays by Shakespeare's contemporaries and commission new verse plays for future seasons. Last summer, Shakespeare's *Henry V* and *The Winter's Tale* were followed by two rarely performed 17th-century works—*The Maid's Tragedy* by Francis Beaumont and John Fletcher, and Thomas Middleton's *A Chaste Maid in Cheapside*.

Another of the theater's divisive issues Rylance had to address was how "pure" productions should be, how true to Elizabethan staging. The prospect of updated Shakespeare—in a gangland Verona, a fictional Fascist England of the 1930s, or other recent cinematic takes on the Bard—sets Sir Peter Hall and some scholars aghast. The Globe's new leader is hardly on the verge of allowing a *Comedy of Errors* on motorcycle[illegible] he's equally wary of having the Globe slide into museum theater. In Rylance's view, the theater should b[illegible] only about reinventing the pas[illegible] also about using it to make con[illegible]ly new theatrical discoveries.

Despite calls to tri[illegible]hakespeare's longer plays, Rylanc[illegible]ors running them in their entiret[illegible]t with intermissions between [illegible] "Cutting a play like *Henry V* to [illegible]hours damages it," he said. "Th[illegible]oor theaters had breaks betwe[illegible]ts so they could change the ca[illegible]. I like the idea of putting interv[illegible]etween each of the five acts so pe[illegible]an get food and drink and have [illegible] to reflect. Each play then bec[illegible] more like a series of five separat[illegible]s."

Even at this late d[illegible]aving intermissions—like cutt[illegible]he plays—remains a hotly del[illegible]issue. The scholarly camp, led [illegible]Gurr, holds out for running the [illegible]onstop, "to keep the momentun[illegible]g." In typical Globe fashion, fi[illegible]cisions are rarely final, and the [illegible]ent is likely to continue up t[illegible]last minute before the curtain.

If Shakespeare [illegible]iergoing a renaissance, with more films, performances and scholarship than ever—including the present Globe reconstruction—Rylance sees the boom as long overdue. "I don't think we've gotten to the bottom of him yet," he mused. "That's probably why there are at least 100 Shakespeare festivals in America each summer now.

"People are hungry for a place where there is some sense of an above and a below without any particular dogma. No one can say whether Shakespeare was Catholic or Protestant, Conservative or Labour, communist or capitalist. All anyone can say is the people he depicts have a heavenly aspect and an earthly aspect and each has a soul trying to balance the two. The plays become a safe place where audiences can explore this tension."

Despite such lofty revelations and tortuous decades of preparation, the resurrected Globe may still fall short. As Sir Peter Hall ruefully pointed out: "Each age kids itself that with its authentic instruments and authentic style it has got the thing itself. Then later ages laugh at it. However faithfully the Globe is done, it will inevitably be a product of the latter part of the 20th century. There is nothing wrong in that if we admit it."

But enough negatives for now. Even Wanamaker knew the Globe, his Globe, would remain a once and future work in progress. If Shakespeare's language has spoken to the world for 400 years, why not the Globe itself, symbol and witness of the old proud presumption to re-create all the world on a stage? Life's but a poor player after all, and after enough strutting and fretting to fill a thousand stages, the Wooden O has once more found its voice.

"Groundlings" watch *Henry V* from the most intense spot in the hou[illegible]hes from the action. Says one actor: "There is a whole new level of communication [illegible]e audience."

Paris-based Richard Covington writes about theater and music. London photographer Julian Nieman travels far and near for shoots.

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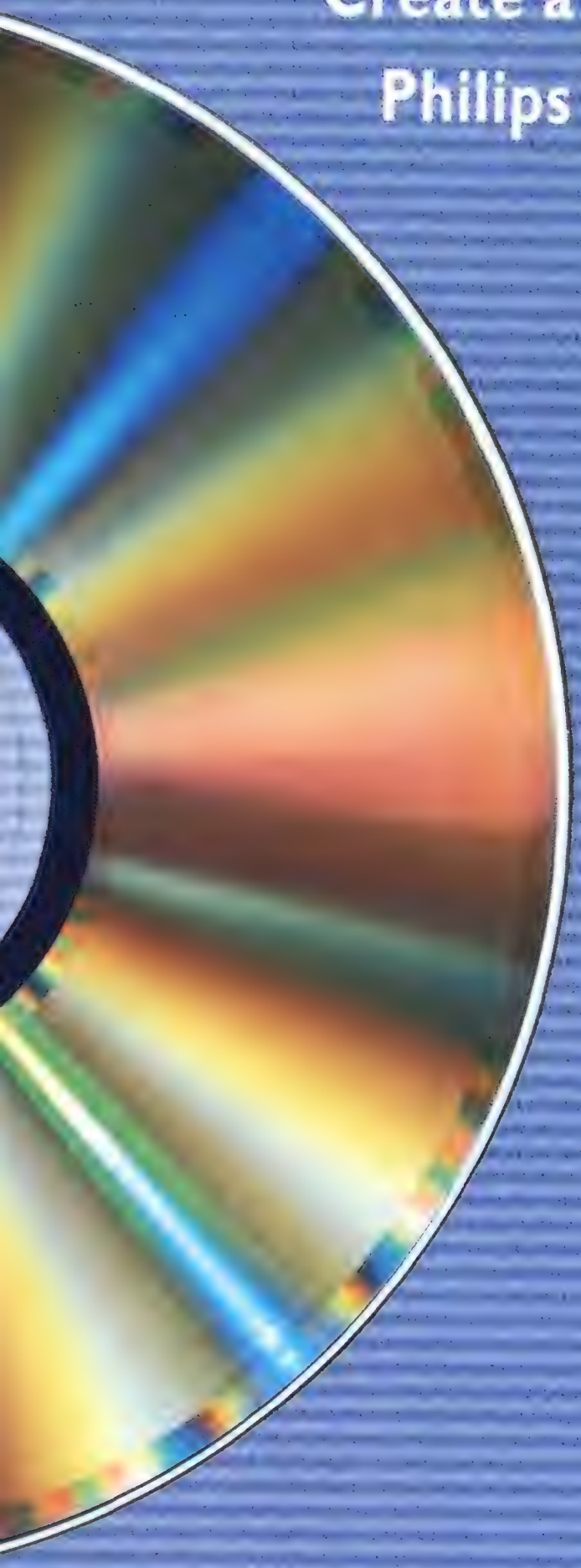

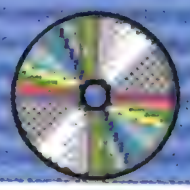

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"Expand the pie before you divvy it up"

BY DOUG STEWART

SOUND HALF-BAKED? NOT TO BILL URY, COAUTHOR OF THE "NEGOTIATOR'S BIBLE," AS HE MEDIATES A PEACE TALK BETWEEN THE RUSSIANS AND THE CHECHENS

IN THE MARBLE AND VARNISHED-WOOD LOBBY of The Hague's grand Hotel Des Indes, William L. Ury is delivering a much-needed pep talk. Seated in armchairs pulled up in a tight circle around him are a dozen jet-lagged international lawyers, ex-diplomats, aid specialists and Kremlinologists. The group has flown in to serve as neutral observers of informal peace talks between Russians and Chechens, the first such international forum since a cease-fire was declared in the breakaway republic of Chechnya a year ago.

The opening reception was to have taken place at the International Peace Palace on Thursday evening, two hours from now, but there's been a snag. According to this morning's newspapers, the airplane bringing the Chechen delegation here was forced down by Russian fighter jets; furious, the Chechen leadership has ordered all Russians out of Chechnya (still recognized internationally as a part of the Russian Federation). As if that weren't bad enough, we now learn that the Chechens, having won belated permission from Moscow to resume their journey, are refusing to use their Russian passports. Extensive negotiations with the Dutch will be necessary for them to enter the country. One of the group wonders idly if the Royal Netherlands Air Force has surface-to-air missiles.

"This doesn't exactly build goodwill," Ury says. "First the Russians force them down. Now the Dutch won't let them in. I imagine they'll be pretty mad once they get here." Worse still, he's just learned that the Chechens on the plane aren't the politically savvy centrists everyone was hoping might attend. Instead, they're part of a militant separatist faction, most of them political hard-liners, Muslims who have never set foot outside the former Soviet Union. Several were field commanders in the recent guerrilla war that humbled the Russian Army.

As the man charged with the nearly impossible task of keeping the forthcoming encounter not only civil but constructive, Ury ought to be having a migraine. But no one's feeling sorry for him. The Harvard-trained negotiation expert runs regular workshops called "Dealing With Difficult People and Difficult Situations," so he asked for it. In fact, as he leans back now amid the whirl of the hotel lobby, he seems almost to be enjoying himself—joking, soothing, offering bits of strategy, cajoling the gloomy faces around him. "One of the things I've learned is, this is like jazz. It's improvised. There's no written score." He shrugs and smiles broadly, his eyes almost crinkling shut.

PHOTOGRAPHS BY BERTHOLD VAN DEN BROUCKE

Enlightening reading: Chechen vice president Vakha Arsanov bones up before the talks.

"We'll be in for a wild ride, I suspect."

Bill Ury, 44, was in his late 20s when he and Harvard Law School's Roger Fisher wrote the negotiator's bible, *Getting To Yes: Negotiating Agreement Without Giving In*. Their 1981 book has sold more than two million copies in 21 languages, including Russian, Chinese, Serbo-Croatian and Romanian, and continues to appear on best-seller lists. The book's fans range from Jimmy Carter and Mikhail Gorbachev to Ann Landers. It argues that positional bargaining—staking out a position, usually an extreme one to start with, then reluctantly narrowing the gap between what's asked and what's offered in a series of small, painful steps—makes for bad feelings and worse deals. Instead, Fisher and Ury preach what they call principled negotiation: probe for your adversary's underlying, often unstated interests, then explore how these may overlap with your own. "Try to expand the pie before you divvy it up," in Ury's words. That win-win solutions are a tiresome mantra of junior sales reps everywhere is a testament to *Getting To Yes*'s impact.

As a mediator, teacher and sometime government adviser, Ury has become a sought-after guru in the booming field of dispute resolution. In the 1980s, he helped the U.S. and Soviet governments replace their obsolete hot line with fully equipped nuclear-crisis centers in each capital. Lately, his focus has shifted to ethnic and secessionist disputes. He's moderated off-the-record talks between Serbs and Croats, Turks and Kurds, and whites and blacks in South Africa—one of many countries where *Getting To Yes* has been a best-seller. Traveling between homes in Colorado and São Paulo, Ury

During a break, Ury (seated) compares notes with co-mediator Bruce Allyn.

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maintains ties with Harvard Law School, where he cofounded the Program on Negotiation and directs its Project on Preventing War. A social anthropologist by training, he's also advised Pentagon generals, strike-prone coal miners, and IBM, AT&T and American Express executives on the fine art of principled negotiation.

"Bill is very charismatic, but he's not stuffing a message down a channel. He's really teaching people to be curious," says Ed Sketch, a London-based personnel manager at the Ford Motor Company, whose 6,000 top executives worldwide have taken Ury's seminars. "His influence on the company has been incalculable. He inoculated a whole culture with a new way of looking at things."

Few Ford executives are battle-scarred mountain guerrillas, however. In The Hague, where the Chechen delegation finally arrives on Friday morning, a day late, Ury knows his techniques will be hard-tested. The Chechens' arrival at the Peace Palace is delayed several hours more while they protest their accommodations at the deluxe Hotel Des Indes. Only when given a peek at their Russian counterparts' rooms as proof that their own quarters aren't inferior do they acquiesce and head to the Peace Palace, where the other conference-goers have been waiting with more than a little trepidation. "These are the real hard-liners," Ury tells me in the corridor as we wait. "They're looking for insult in everything. There's a drama unfolding here."

The talks are officially the third annual meeting of the Hague Initiative. The high-level but unofficial gatherings are pulled together by a nonprofit consulting group, the Conflict Management Group of Cambridge, Massachusetts—which Roger Fisher cofounded—with the help of Harvard's Program on Negotiation, the Carnegie Corporation of New York, and official bodies in the Netherlands and Russia. The meetings bring together adversaries from ethnic danger zones within the former Soviet Union—Russians, Tatars, Crimeans, Moldovans, Georgians and now Chechens—to talk privately about ways to patch up their differences.

"He's really teaching people to be curious; he inoculated a whole culture with a new way of looking at things."

As words fly, the main points are written down, then posted around the room.

At last, with barely a word or a glance at their lavish surroundings, the half-dozen Chechen delegates and their bodyguards sweep quickly into the Small Hall of Justice and form a tense, inward-facing circle, shoulder to shoulder. None is wearing fatigues or is visibly armed. The presidents of Tatarstan and Ingushetia, semiautonomous republics within the new Russian Federation, join the circle and exchange bear hugs with their fellow Muslims. The four Russian ministers on hand hang back, affecting nonchalance. Ury and Bruce Allyn, a former Harvard colleague and Russia expert, also bide their time on the periphery. Minutes pass with no one speaking. Yes, this is going to be tough: the Chechens are already playing it cagey, refusing to make the first move, refusing even to make eye contact with outsiders.

When everyone is seated, Ury makes the formal introductions. The Chechens sit at tables along one side of the chamber, staring stonily ahead as though the Russians across from them didn't exist. "The purpose of the Hague Initiative is to learn," Ury says soberly as an interpreter in a soundproof booth provides a Russian translation. "I'd like to emphasize that this is going to be very hard work. One hears things from the other side that one does not like to hear."

The sternest of the Chechens, obviously their leader, is stocky, poker-faced Vakha Arsanov, Chechnya's vice president. As a point of pride, he wears a tall Persian lamb's wool hat at all times, even with his earphones. He opens with a prepared speech, a long and withering attack on Russia, which he insists on delivering in Chechen. Through our earphones, we hear a century-by-century recitation of how Russians have massacred, tortured, burned and buried alive generations of Chechens. Arsanov isn't leaving much negotiating room, I notice. To him, Chechnya has never been a part of Russia; it has been an unwillingly subjugated nation since the 16th century. The Russians in the room, to their credit, are keeping their cool. They neither roll their eyes nor shake their heads, though they're rubbing their faces a lot.

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Past No: Negotiating Your Way From Confrontation To Cooperation, Ury praised the perspective of Japan's home-run king, Sadahara Oh, who viewed opposing pitchers not as enemies trying to do him in but as partners offering him repeated opportunities to crank another ball out of the park. In a negotiation, Ury advised, don't reject the other side's accusations. Reframe them—treat them as invitations to talk about problems you're both trying to solve. "Reframing works," Ury wrote, "because every message is subject to interpretation."

Now Ury attempts to sum up Arsanov's diatribe as a constructive first step in getting to yes. He thanks him for his "passion" and his "clear articulation" of Chechnya's need for security from attack, acknowledges the importance of preventing another round of war, and agrees that rebuilding is urgently needed. If that's common ground, it's a sliver the width of a rock climber's toehold. Even so, simply allowing someone to vent has its place, Ury had told me earlier. The key is not to react in kind. "You're not trying to control the other person's behavior," Ury had said. "You're trying to control your own."

Simply allowing someone to vent has its place, Ury says. "You're not trying to control the other person's behavior. You're trying to control your own."

Presidents Mintimer Shaimiyev of Tatarstan and Ruslan Aushev of Ingushetia (seated, from left) helped anchor the discussion; at right is Russian delegate Boris Berezovsky.

Two Russian ministers speak. They are, in fact, models of self-control. (Yes, of course, each tells me later, they have studied Bill Ury's books.) In calm tones, they avow their respect for the Chechen people and their horror at the recent bloodshed. One of them, Emil Payin, a short, sleepy-looking adviser to Russian president Boris Yeltsin, suggests the war in Chechnya was never supported by the Russian public. Almost imperceptibly, the mood in the room seems to relax. The Chechens lean back in their chairs and look around the hall a bit. Several take notes. One of the American consultants is writing key points on an easel with a pen. As the sheets of newsprint fill up, he tears them off and tapes them to the walls.

The lull is short-lived. Said-Khasan Abumuslimov, a hawk-faced firebrand and former Chechen vice president, launches into a loud and angry denunciation of Russian treachery. Before he's finished, he's attacked the United States for abetting the Russian war effort and oppressing the people of Puerto Rico. It's quite a performance. The translator labors to keep up, gesturing in the dark booth as he speaks. Payin leans back with the weary smile of someone who's paid to take abuse. Ury listens politely, but his face has grown noticeably paler. He's watching a man pass up an opportunity. Ury's first rule of dealing with angry accusations, he always says, is "go to the balcony"—pretend you're watching from a distance. I imagine him now willing himself not to react in exasperation.

Ury is a careful orchestrator of the meetings he facilitates, and part of his preparation is gathering the right mix of third parties to call on. Now he decides it's time to cue Hurst Hannum, a professor at Tufts University's Fletcher School of Law and Diplomacy. "Our heavy," Ury jokingly calls him. Professorial but tough, Hannum is an expert on sovereignty. He calmly suggests that the Chechens' obsession with Russian war crimes here has no bearing on self-determination, and that their insistence on independence is naive. Many breakaway regions have declared themselves independent—Biafra, Northern Ireland, the

"The first few hours were very tense. We had to be the container for the Chechens' anger and hostility. It's like mixing unpredictable chemicals—is there going to be a nuclear explosion?"

As the talks progress, everyone's shoulders drop a bit; here, President Aushev, left, chats with the Chechen delegates between formal sessions.

Punjab, Kurdistan—but none exists today as a country. If they're here to be treated like everyone else, Hannum suggests, that's exactly how they're being treated: like Biafra.

The Chechens are paying close attention now, cocking their heads in curiosity and taking notes. Several of the European and American experts weigh in with tactful suggestions that Chechnya do more about its own rampant crime and kidnappings before expecting aid from outside. Sheets of newsprint marked in Russian and English now hang in a double row from the carved wooden mezzanine, giving the judicial chamber the incongruous look of an elementary school classroom. Ury reframes the flow of discussion as optimistically as he dares: "We've made some real progress here in understanding points of view and history and desires." He suggests the fundamental sticking point between Chechens and Russians now is distrust. "The war has left many deep wounds, not all of them physical. How do you begin to heal the wounds that are in people's hearts so that they can treat each other as equal partners?" He calls on a third-party participant, the president of Ingushetia, Ruslan Aushev, who has been nearly silent until now.

Speaking in Russian, Aushev says simply, "The discussion is progressing well. We should continue."

His interjection seems to give everyone a lift—there are nods and smiles all around. By himself, Ury doesn't carry any weight with the Chechens, who may never have heard of Biafra, or Harvard, but Aushev is a wily veteran of secessionist struggles with Moscow and is a Muslim neighbor from the Caucasus to boot. Ury's timing, as he conducts this unwritten score, is perfect.

That evening, the participants gather at a reception and dinner in a private room of the hotel's swank restaurant. The Russians and Chechens are keeping their distance, but the Westerners, at least, make a point of mixing with both, snaring interpreters on the fly. Teetotalers all, the Chechens drink orange juice from their champagne glasses, but they seem to be loosening up all the same. I converse in broken French with a young Chechen officer wounded in the recent war. He gives me a laminated wallet calendar with the Muslim holy days in red and, on the reverse, a photograph of the Chechen guerrilla leader, Shamil Basayev, in beard, headband and grenades. Ury, though fighting a cold and the effects of a flight from Brazil the previous day, is good-humored and unflappable. "The first few hours were very tense. We had to be the container for the Chechens' anger and their hostility. It's like a chemist mixing unpredictable chemicals—is there going to be a nuclear explosion? How far can we let this go?" He laughs.

The level of bombast and vitriol here is nothing new to Ury. His 1982 PhD thesis at Harvard was titled "Talk Out or Walk Out: The Role and Control of Conflict in a Kentucky Coal Mine." The coal mine he studied was so plagued by wildcat strikes that management was threatening to close it down. Ury spent long days and nights underground with miners who viewed their bosses with a distrust that bordered on loathing. Miners wore black hard

Daud Akhmadov, vice prime minister of Chechnya, takes advantage of a lull in the proceedings to check out printed materials on conflict resolution.

hats; managers, white ones. Ury took a white hard hat and spray-painted it green. Even so, he had to submit to a hazing his first night underground by a half-dozen miners who gang-tackled him, pulled down his pants and clipped a hair sample with a rusty knife. Having thus been "haired," Ury was accepted by the miners, if not as a full-fledged good old boy, at least as a harmless and amusing alien. With colleagues Jeanne Brett and Stephen Goldberg, he helped devise an orderly system that forced miners and managers to sit down together and listen to each other's complaints (a novelty in many mines), then jointly work out solutions. The frequency of walkouts plunged immediately.

Growing up in a large and sometimes tumultuous extended family, Ury has always been intrigued by dispute resolution. His headstrong parents often quarreled. When he was 6, they failed to resolve a dispute over where they would live. So, for years the family moved back and forth between California, his father's choice, and Switzerland, his mother's. He attended Swiss schools before heading for Yale and then Harvard to study anthropology. Ury himself has had his share of disputes—with roommates, cabdrivers, and his first wife—but he invariably finds an amicable solution. He and his new wife, a Brazilian biochemist, attended his former wife's wedding.

Though Ury personally is a passionate advocate for broad-brush concepts like peace, tolerance and consensus, at the professional level he doesn't take sides. In the coal mines, in the Baltics, in South Africa, in Latin America, Ury always makes a point of teaching the ideas of principled negotiation to both sides in a dispute. Agreements are more likely to stick that way, he says. (One reason *Getting To Yes* has sold so many copies: union leaders will buy stacks of copies for management, and vice versa.) Ed Sketch of Ford describes a workshop Ury ran that brought together 100 of the company's top suppliers with 100 of its own purchasing managers. "The suppliers couldn't believe that we at Ford were teaching them how to be better negotiators," Sketch says. "Bill taught both sides that the essence of a good supplier-purchaser relationship is to get it right, not to screw each other. That's a pretty unusual approach."

Rarely do the two sides in a negotiation have a free hand. Each party is aware of the need to look good when it reports back to its constituency, be it a union's rank and file or a nation's parliament. In his mediation work, Ury likes to ask adversaries to try a deceptively simple exercise: write your opponent's victory speech. "If you can't do that," he tells them, "you know you've got to look again at what you're asking of the other side."

Now, as the second and final day of the truncated Hague conference gets under way, Ury suggests the Chechens imagine that President Yeltsin tells them: fine, you're inde-

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President Shaimiyev of Tatarstan and Russian ambassador-at-large Boris Kolokolov talk in a private corner; informal discussions are key to moving the talks along.

pendent. "Ask yourselves, what is the most persuasive speech Mr. Yeltsin could give that would help his people—including his own opposition—accept your goal? And what could you do that would make his argument more persuasive?"

This the Chechens like. They're leaning forward at their tables, smiling and talking among themselves as they imagine the scenario. Ury asks the Russians to do the same: "Imagine President Maskhadov had to give a speech telling his people they will remain part of the Russian Federation. How would they react?" For Maskhadov, of course, it would be political suicide, as everyone in the room well knows. One of the Russians objects that he would no more presume to give Maskhadov advice than he would the queen of England. Ury explains gently that he meant this as a mental exercise, not a diplomatic strategy. Even Chechnya's impassive foreign minister is smiling now.

Later, as the regular session breaks up, several Russians and Chechens cluster around Arthur Martirosyan, one of several Russian-speaking consultants on hand from Cambridge. A joint statement of the results of the conference must be drafted in time for a press conference at 2 P.M. Martirosyan was up half the night loading a Russian character set into his laptop computer. Now he sits good-naturedly typing and deleting, typing and deleting, as rival delegates dart in and out, leaning over his shoulders like overbearing bosses, dictating their preferred phraseology.

To me, the little group seems to be radiating hostility, but Ury is delighted by the scene. "This is the Chechen hard core," he says quietly. "These are the guys with the guns, the guys you supposedly *cannot* get to yes. And here they are, drafting a joint statement with the Russians." On paper, the result will be a vague call for peace, reconstruction and security, but it's the process that counts, Ury says. However grouchily, the age-old enemies are working together. In the press conference that follows, President Aushev declares, "If we had done this three years ago, there wouldn't have been a war."

Over coffee at the hotel, Ury talks to me about why he believes negotiating has the chance to eclipse force as a tool for settling international disputes. "The traditional way to handle a Chechnya was to beat the guys into the ground. And as in Chechnya, Afghanistan, Vietnam and the West Bank, it doesn't work. Increasingly, it's the Chechens of the world who are defeating, or at least stalemating, the Russians of the world." In modern warfare, there's never a winning side, he says, so countries must devise creative new ways of finding satisfaction together, the way whites and blacks in South Africa have.

The culture of negotiation is spreading far beyond politics and diplomacy, he says. "It's happening in the elementary schools, in the way divorces are handled, in corporations, in the courts. People are realizing that adversarial, win-lose attitudes in an increasingly interdependent world, where I depend on you and you depend on me, don't work anymore. Using those tactics is like asking, 'Who's winning this marriage?'"

Between mediating assignments, Ury has been working on a book about conflict and human evolution. "You hear it said that violence is part of human nature and that warfare is inevitable," he says. "The usual assumption is that we've acquired a thin veneer of civilization. Scratch the veneer, and you get Bosnia." Hobbes and Freud supported this view; crime-happy news reports reinforce it. As an anthropologist, Ury doesn't think the assumption holds up. If violence is as innate as eye color, how can Colombia have a per capita homicide rate 80 times as high as Switzerland's? To Ury, the real question should be: How can a society move from a Colombia to a Switzerland?

To find out, he's spent time studying several remote hunter-gatherer societies—among them the Bushmen of Africa's Kalahari Desert and the Semai of the Malaysian rain forest. These are among the least violent societies in the world, he says. "The Bushmen have no central authority, no policemen, and they have dangerous weapons, like poisoned arrows. You'd think they'd have more violence, not less." Ury recognizes that the Bushmen and the Semai aren't necessarily more easygoing than other

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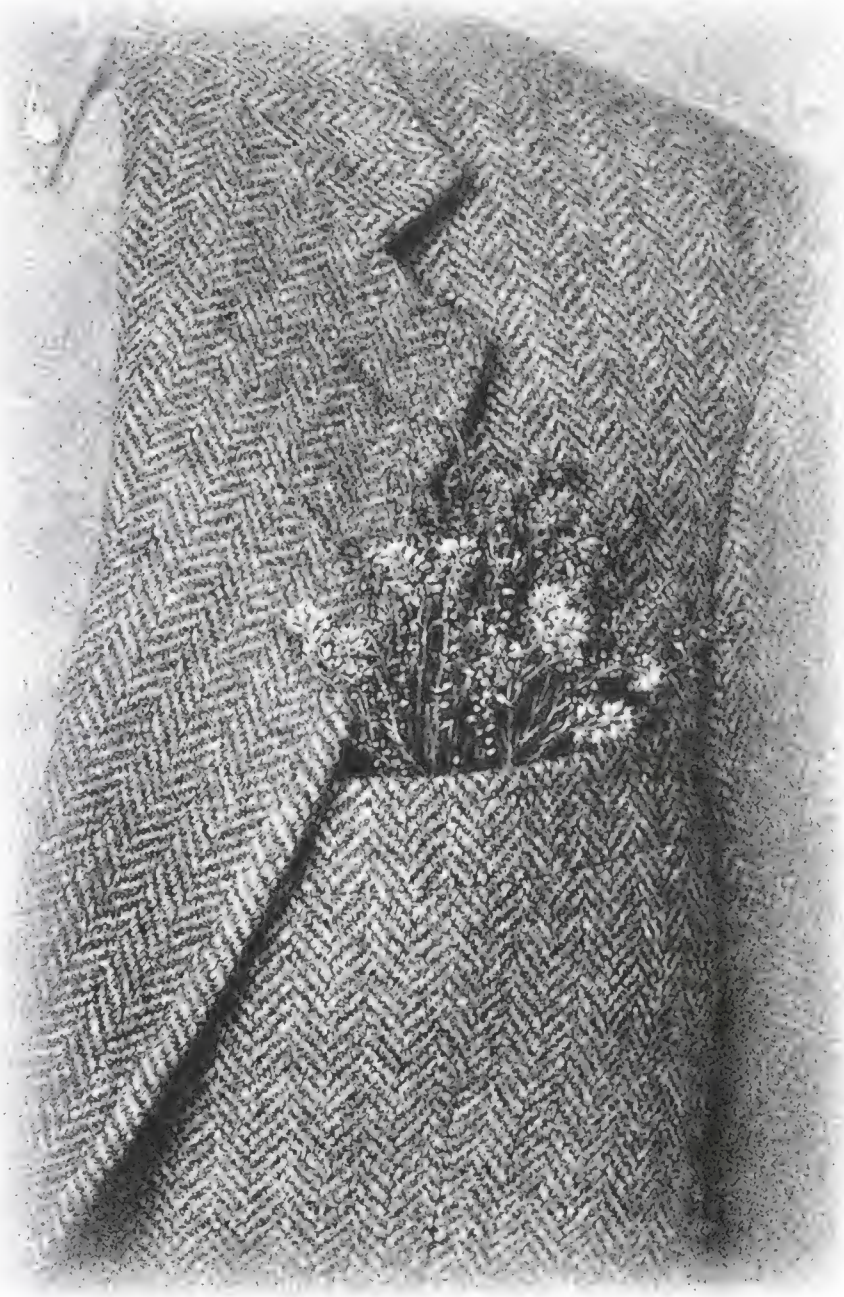

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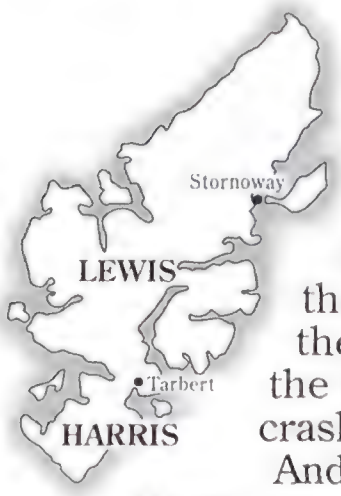

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Martirosyan sits good-naturedly typing and deleting as rival delegates dart in and out, leaning over his shoulders like overbearing bosses, dictating phraseology for a joint statement.

people. "They have the same quarrels and jealousies that we have, but they've developed a roster of ways to keep it from escalating into violence."

The Bushmen, for example, are almost compulsive about sharing game. As a result, nearly everyone in a community owes everyone else a favor, which makes open hostility more awkward. And when a dispute flares up, friends and family know to hide the parties' poisoned arrows for a few days. Among Malaysia's Semai, says Ury, "if a child hits another child, they have a parliament of children. All the kids in the community get together in a big circle and talk about what happened, how it started, how to prevent it from happening again." The children learn that fights are everybody's affair, not just the fighters'. On a global scale, Ury believes, the same lesson could avert future Bosnias and Rwandas. In both cases, neighboring countries could have quelled the violence early on, had they chosen to get involved.

The conference's final meeting is dinner at an elegant restaurant in the Dutch countryside. At the Peace Palace earlier in the day, the eldest of the Russians, Ambassador-at-Large Boris Kolokolov, had spoken emotionally of serving alongside loyal Chechen comrades in World War II; he refused to be painted, he said almost angrily, as an enemy of the Chechen people. Now, as we wait to take our seats, the eldest of the Chechens, Daud Akhmadov, gestures to the white-haired Russian to sit with him—the first such fraternization of the gathering.

Ury rises to make a toast. "God gave us two ears and one mouth for a reason," he says to general laughter. More toasts follow, from Russians and Chechens. The atmosphere is still a bit strained—many of the toasts have a chiding undertone of "Why didn't you get to know us sooner?"—but it was only 36 hours earlier that the words "genocide" and "terrorism" were being bandied about. The diminutive Daud Akhmadov, the only Chechen with laugh lines visible on his face, offers a toast to Bill Ury and his dispute-resolving colleagues. "In that you enjoy dealing with conflicts," he says in Russian, raising a juice-filled wineglass, "I am sure you will never be without a job."

Doug Stewart last wrote for SMITHSONIAN *about Mark Catesby (September 1997). Berthold Van den Broucke is a staff photographer for a Belgian photo agency.*

Time Marches On...

Tick, Tock, Tick, Tock, *Sniff*, Tock, Tick, Tock, Tick,
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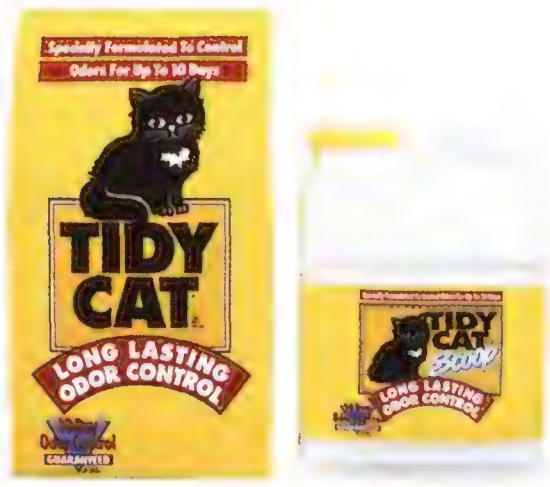

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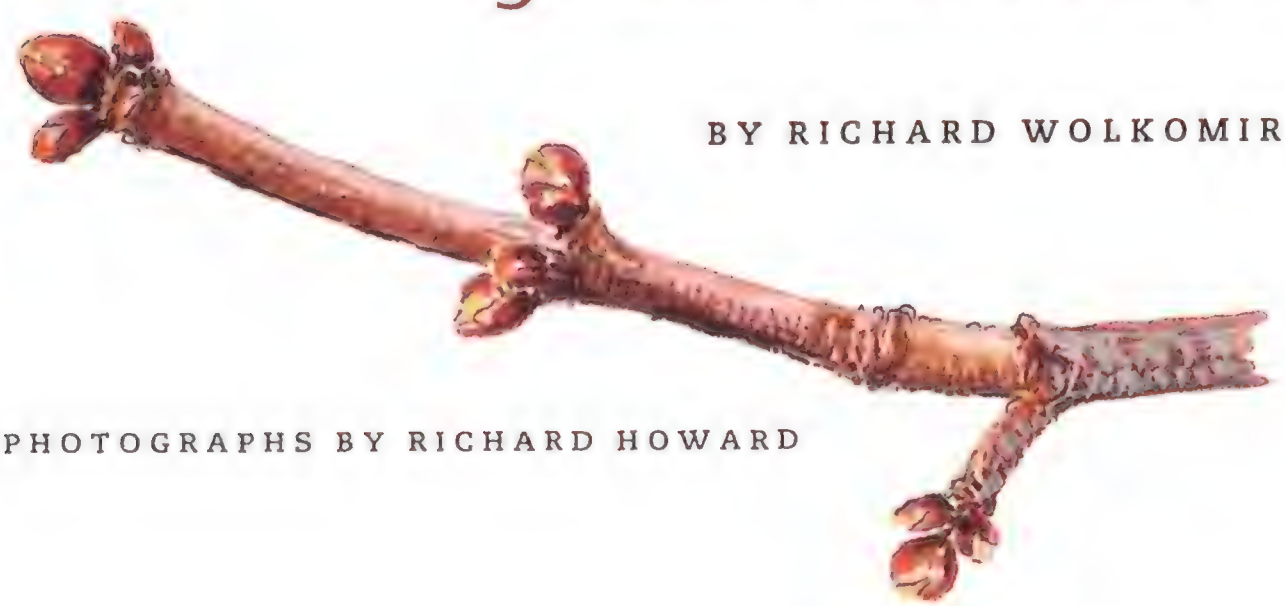

BY RICHARD WOLKOMIR

PHOTOGRAPHS BY RICHARD HOWARD

"I ALWAYS KEEP A DEAD CALF NEAR THE HOUSE," Bernd Heinrich says over his shoulder. "Or a sheep." He is running through a Green Mountains forest in April. Leaping gullies. Vaulting boulders. Splashing through snowmelt pools. Pelting up slopes. He is off to check on a raven's nest, explaining over his shoulder how he found it—ravens feed on the carcasses he puts out, then he shadows them home.

Heinrich may be a University of Vermont biologist, Guggenheim fellow, Harvard fellow and recipient of Germany's Alexander von Humboldt Senior Scientist Award, but among world-class biologists he is an anomaly. Take his interest in ravens, for instance—Heinrich is not an ornithologist. He is the leading expert on thermoregulation in insects. He wrote the book, literally, on bumblebees: his 1979 opus *Bumblebee Economics*, a National Book Award nominee, has become a natural history classic. A recent book is *The Thermal Warriors: Strategies of Insect Survival*. His latest title is *The Trees in My Forest*, an homage to the rhythms of life in his 300-acre Maine forest. But no species, animal or vegetable, is safe from Heinrich's scrutiny. He once raised a great horned owl in his backwoods Maine cabin, a micro-war he chronicled in *One Man's Owl*. Its aerial assaults and bombardments culminated in a crashed marriage.

"After I check this nest I'll stop at a marsh—I've gotten really interested in wood frogs," he says, over his shoulder, as he hurtles up a slope. He has no need to run. He just likes to. How many distinguished scientists born in 1940 can course like a hound through a mountainside forest? He set a cluster of American and world ultramarathon records, including 100 kilometers, 100 miles, and the 24-hour run, for which he covered 157 miles. He runs easily up this hill to its termination at a rock escarpment, three stories high. Two ravens peel off, silently sneaking away on aeronautical tiptoes.

Pounding up the drive of his Vermont house, Bernd Heinrich is surrounded by some of his inquisitive research subjects—ravens.

Up a cliffside red maple's trunk Heinrich has nailed wooden handholds. Now, jumping to grab the first handhold, he climbs nimbly up, 30 feet or so. He peers across at a ledge, where the ravens have heaped a twig nest. He shakes his head. "Still eggs," he says, clambering back down the trunk. "I'll have to wait a few weeks." He means to rob the nest. And he has the federal and state permits he needs to do it.

Back home, a few miles down the dirt road, Heinrich has a new wife and a 4-day-old son. But his household is incomplete because the chicken-wire aviary he built in back is currently bereft of ravens. He needs captive ravens for his studies, and this nest will be his supplier. But it is on a skinny ledge, two-thirds of the way up an otherwise smooth cliff. It is unclear how he will burgle it. "Oh, I'll have a rope," he says, a hint in his intonation of Maine-inflected German. "I'll hang it from up on top," he says. "Climb down. Have a bag for the chicks."

Right now, however, the springtime wood-frog window is closing. He bangs his pickup along dirt roads to a small pond. He wades in knee deep, toting a yellow plastic bucket. When he splashes out, his boots and jeans sopping, his bucket drips murky water. Floating inside are five gelatinous masses, each dotted with black wood-frog eggs.

Ordinarily, a biologist might specialize, to exaggerate only slightly, on one subspecies' morphological variant's left knee. But Heinrich jumps entire taxonomical classes, even phyla. What sort of insect expert, already raven-obsessed, poaches on the herpetologist's domain, scooping up incipient polliwogs? "I never considered myself an entomologist—I'm a *biologist*," says Heinrich, a trace indignant, hoisting his bucket onto the back of his truck. "Insects are model systems that you can manipulate easily, but similar principles might apply to snow fleas, kangaroos and running shoes—what interests me is looking at the larger pattern of things."

He seems astonished that somebody would not study wood frogs. For instance, he wonders why many wood frogs breed in temporary snowmelt pools, often just puddles. It means their polliwogs must mature at high speed. Heinrich suspects the payback is avoiding fish predation. However, he has other questions. "One pool might have hundreds of them, but the next pool is totally empty—why do they concentrate in any one pool?" he asks. Back home, he shows off artificial pools he has dug, to probe ideas. "My hypothesis is that males hatched in one pond, all brothers, go back there to mate, while the females go to any ponds, which curtails inbreeding," he says.

He has also turned over tissue samples from wild-caught frogs to one of his colleagues at a University of Vermont laboratory. His collaborator is analyzing DNA from these samples, testing for brotherhood.

This year's big question is why, in any one pool, do females deposit all their eggs in one large mass? Heinrich theorizes it keeps the egg masses warmer. To find out, he wades into ponds to take the eggs' temperatures at various times and on cloudy days versus sunny days. So far, his data show massed eggs do stay warmer.

Meanwhile, he improvises impromptu experiments. "In winter, wood frogs freeze solid," he says. "I've put them in a deep freeze, thawed

In 1964, Heinrich, here with his father and a pet owl, joined his parents on a specimen-collecting expedition to Tanganyika. The journey focused his sights on field research.

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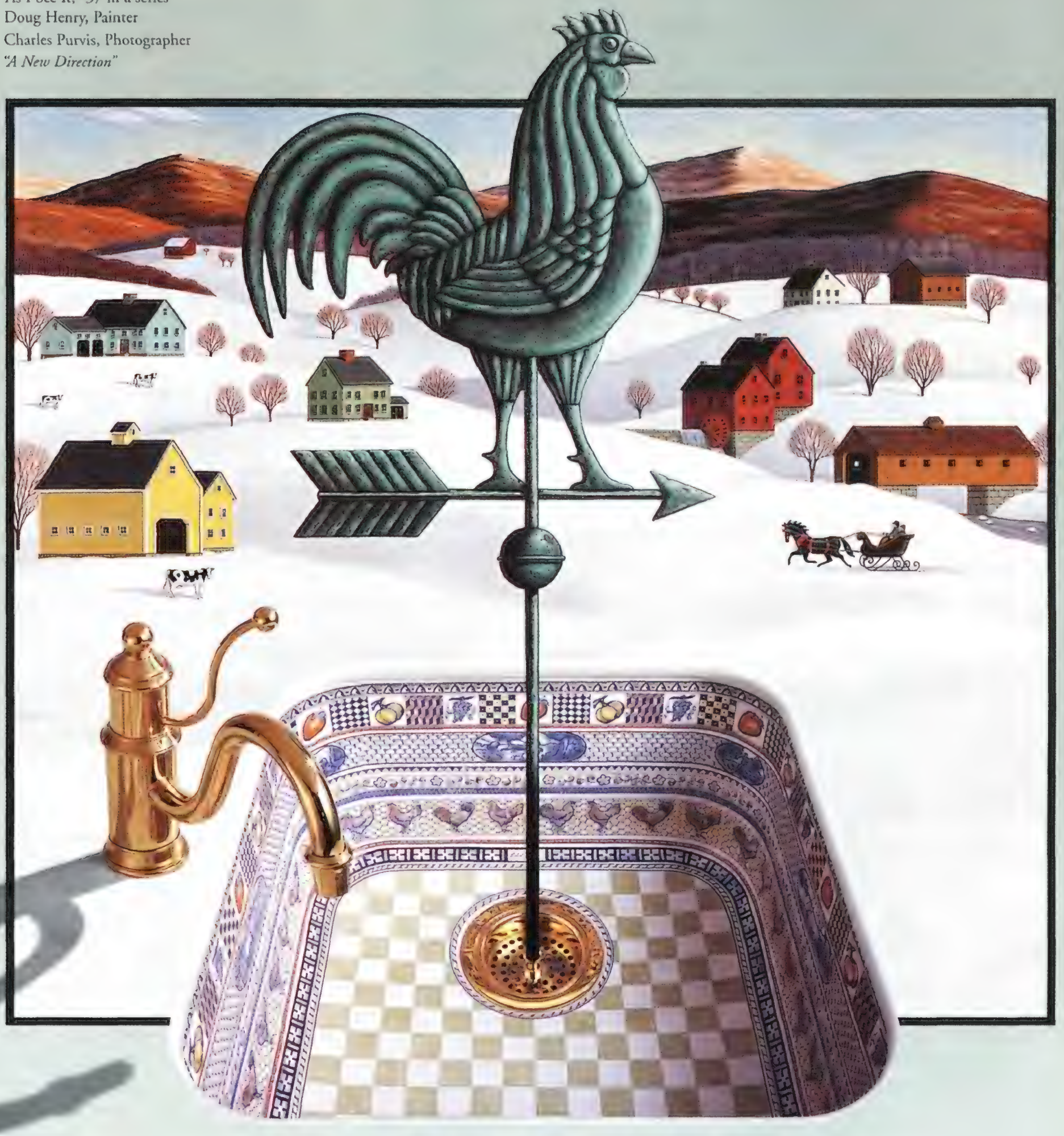

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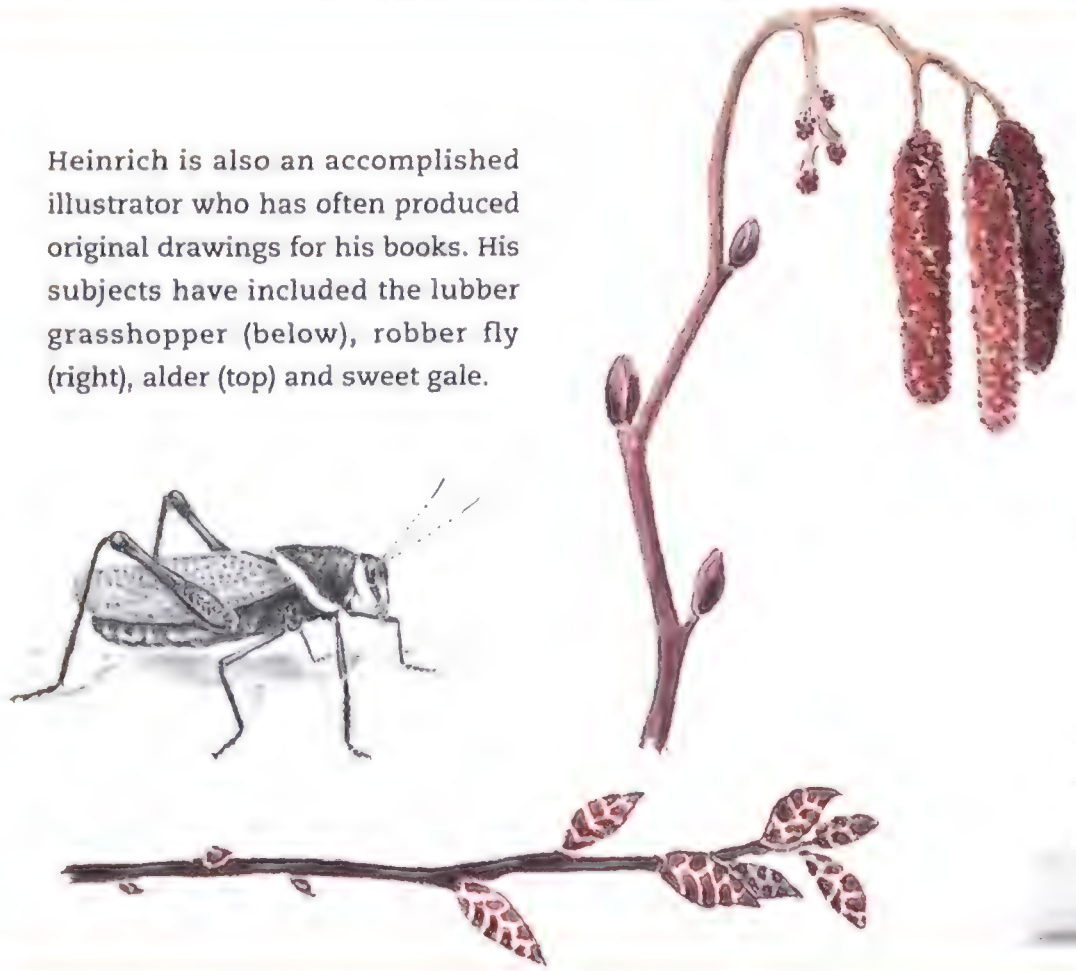
Heinrich is also an accomplished illustrator who has often produced original drawings for his books. His subjects have included the lubber grasshopper (below), robber fly (right), alder (top) and sweet gale.



them, and they're still alive—they flood their system with glycerol to protect their cells." It is a well-known insect trick. "But these are one of the few vertebrates that can freeze and survive," he says.

Jumping disciplines means new techniques, new equipment. And you start out knowing nothing. "It takes a little daring," Heinrich says. His contrariness goes far back. After high school, for instance, he applied to five colleges. His grades were good, but only the University of Maine accepted him. "It might be," he says, "because I wrote all my applications in pencil, scrawled them, because if I typed them, or wrote them carefully with a pen, they might accept me just for my penmanship!"

Young Bernd arrived at that pencil-scrawling decision via a childhood that blended elements of *War and Peace* and *The Swiss Family Robinson* with Thoreauvian nuances and touches from Charles Dickens' *Hard Times*. His adult peculiarities—a fierce attachment to mountain-man life in outback Maine, for example, or occasional dinners of grilled mouse—are rooted in his unusual youth.

"We were landed gentry," Heinrich says. They lived in Poland, on a vast country estate. But Heinrich's father, Gerd, an amateur biologist who collected rare birds in Burma and Indonesia for the natural history museums in Berlin, Chicago and New York, was half Jewish and a potentially subversive intellectual. To throw the Nazis off his scent, he pulled strings from his World War I service as a German pilot to get into the Luftwaffe. And so 4-year-old Bernd, his two sisters, and their mother were alone at the estate when the Soviet Army rolled across Poland.

Bernd's mother led her brood away in a snowstorm, on a horse-drawn sleigh, knowing they would never come back, hoping to reach Bernd's father's air base. Eventually they hitched a ride with a retreating panzer division. Reunited, the family fled the front aboard an ancient wood-burning truck, only to become encircled by the Red Army. Gerd Heinrich managed to commandeer a rickety flying wreck and offered bribes to secure aviation fuel. Just as the Russians were closing in, the family took off.

More adventures followed. Narrow escapes. More bribes. Disguises. Once SS troopers, apt to shoot Bernd's father as a deserter, pulled firewood from the brush pile under which the elder Heinrich lay hidden. Ultimately, helped by occupying Allied troops, the family made it into what would become West Germany.

Penniless, the Heinrichs settled in a sprawling forest preserve near Hamburg, for five years occupying a defunct nature club's cabin. "Like most animals," Heinrich would remember, "our major concern was with finding food."

Foraging became 5-year-old Bernd's business. He picked raspberries and blueberries, relieving the tedium by capturing caterpillars. A fat green caterpillar, red-spotted and tufted, brought home to the brookside cabin under the spruces, would spin a cocoon and emerge a silk moth. It was more exciting than any toy. He hunted mushrooms and caught brown trout with his hands. Sometimes British soldiers, hunting, wounded a boar or elk that Bernd might find dead, bringing meat to his family.

He became a slingshot marksman: holding limp birds in his hand, he learned the beauty of their feathers and

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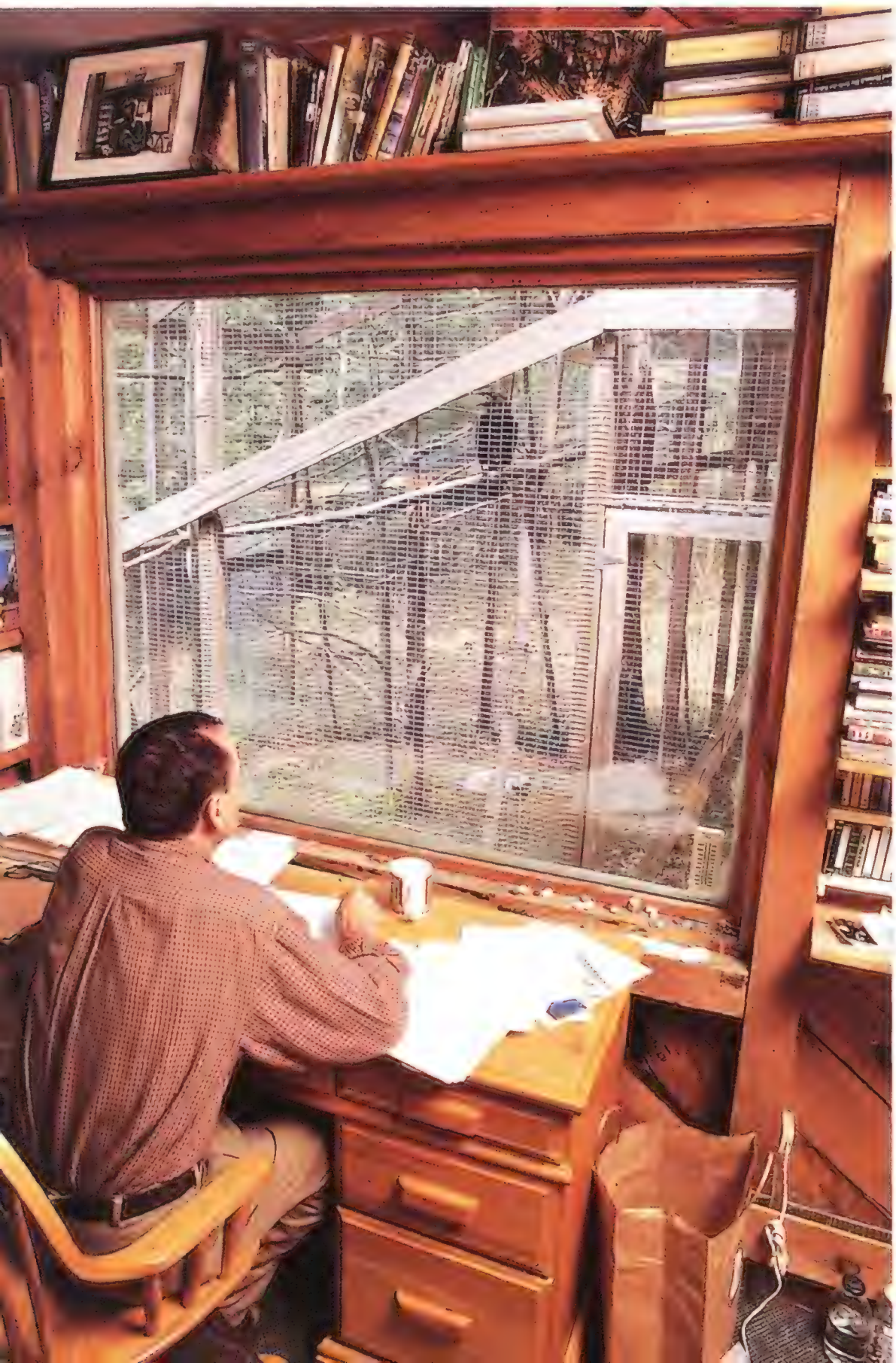
anatomical details. (The family collected specimens for museums as an income source: generally, they cooked and ate the discarded flesh once the specimens were cleaned.) Eventually Bernd would become an accomplished wildlife artist, illustrating his own books. For now, though, he mastered foraging arts, such as digging traps for mice and shrews. He still knows "no greater treat than mice fried to a brown crisp."

It was a rodent-centered family. Besides eating the little animals, they collected their fleas to sell to a London researcher. "Every pfennig helped," says Heinrich. They were shipping the skins of birds and mammals to the New York and Chicago museums of natural history. Heinrich attended school in a nearby village, Hamfelde. But his father taught him the ABCs of ant lions and beetles. He became "intoxicated with discovery." When he was 9, Bernd gave his father a card on which he had drawn a stag beetle, with a note on the back: Bernd reported that he had collected 447 beetles of 135 species. And he wished Papa a happy birthday.

From the window of his Vermont study, Heinrich conducts field research: ongoing observation of this aviary has yielded rich insight into raven behavior.



Meanwhile, Bernd began collecting birds' eggs. "To hunt for nests became the great passion in my life," he remembers. By Papa's orders, he had to eat the contents of each egg he collected, because no food could be wasted. He raised a baby crow, Jacob, soon his best friend. "I dreaded the idea of growing up and having to work all day," Heinrich remembers.

But he already worked hard. A family attempt to sell stuffed mice dressed as Mickey Mouse flopped. Peddling beechnuts proved equally unprofitable. Finally, Heinrich's teetotaler father hit upon bootlegging, in partnership with another refugee, a chemist. It was the two youngest Heinrichs' job to bring in firewood to fuel the distillery. Bernd's father smuggled the hooch into Hamburg in his knapsack, hidden under cigar boxes containing rows of dried parasitic wasps.

Decades later, when Heinrich sought a PhD at the University of California, Los Angeles, examiners would ask why he wanted to study biology. He would cite a spring day in that European forest, bumblebees humming, willow warblers and pied flycatchers snagging bugs among the pussy willows. He had been overcome with "a delicious, light-headed feeling."

Heinrich was 10 when his family emigrated to the United States. He gazed at Manhattan's skyscraper skyline. What, he wondered, could they catch to eat? They stayed a few days in New Jersey with a friend, the eminent biologist Ernst Mayr, then set up as tenant farmers in Maine. It wasn't long until they bought a rundown farm of their own, for the New York Museum of Natural History paid them $3,000 for specimens they had collected. Heinrich surrounded the farmhouse with birdhouses. Soon he had a new pet crow.

But the senior Heinrichs resumed museum

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collecting. They would be gone for months, on expeditions to Mexico and Africa. They left Bernd and his younger sister at the Good Will Farm and School, in Hinckley, Maine, an institution for indigent children. Good Will kids worked from dawn to dark at farm chores, lessons and Sunday Bible studies. Heinrich hated the place. To maximize his brief forest visits, he ran, unknowingly training for world records. Then when he was 17, he led several boys on a breakout from the school. Eventually, he ended up at his family's unoccupied farm. In two nights and a day he had covered 50 miles. But the state police caught up with the boys, and they were returned to Good Will.

Eventually he went to the University of Maine to study forestry. Courses on surveying and fire fighting frustrated him, however, offering little insight into biospheric mechanisms. And so he decided to take a job with his parents, dropping out to go on a Tanganyikan expedition as specimen hunter. He would be charged by a rhino. A buffalo would gore a companion through the thighs. But Africa focused his thinking: he would study nature's fundamentals. He returned to the University of Maine set on becoming a cell biologist.

The astute raven perches on the bar, reaches down with its beak and draws up a loop of string, holds it with a foot, draws up a second loop, and so on, until the morsel tied to the string is within reach.

By 1966 he was at UCLA working on a PhD project: the protozoan tetrahymena's cell physiology. Sitting in his lab one day, waiting to use the department's ultracentrifuge, phenol fumes wafting up from his workbench, he looked out the window at a red-tailed hawk soaring. Where was its nest? he wondered. He had no time to hunt for that nest. And he glimpsed his future—indoors, bent over a microscope. A reviewer judging Heinrich's application for a grant once sneered: "Heinrich just wants to play." Exactly, says Heinrich.

He switched from cell biology to physiological ecology, a discipline that would get him outdoors, where he could "play." He began a new project: sphinx moths. Two researchers had reported that sphinx moths, which feed on flower nectar, hovering like hummingbirds, are bird-like in maintaining a constant body temperature in flight, a "warm-bloodedness" then unknown in insects. When the air chills, the researchers maintained, sphinx moths throttle up their metabolism to generate extra heat in flight. Heinrich suspected the truth might be the opposite.

Some time later, after taking the temperature of laboratory moths—flying and resting, in cold air and warm air—and camping in the Mojave to jab wild night-flying moths with thermometers, and aiming heat lamps at the thoraxes of tied-down sphinx moths and tying off key moth blood vessels, Heinrich had an answer. Sphinx moths, he discovered, do not generate extra heat during flight. The flexing muscles attached to their wings (flight muscles) always generate a constant amount of heat, usually too much. Depending on the air temperature, the moths shed just enough excess heat to maintain a constant temperature. They do it, Heinrich found, via their blood, shunting heat from thorax to abdomen, to radiate into the air.

A newly fledged PhD, Heinrich returned to his family's run-down farm to relax and get back in touch with his hunting-fishing-backwoods inner self. Instead, in fireweed growing where the family had burned a collapsed shed, he noticed squadrons of buzzing bumblebees. Might bumblebees, he wondered, also be warm-blooded? Soon he was chasing bumblebees to take their temperatures, graphing his daily results. He dropped sugar syrup into fireweed blossoms to induce bumblebees to dally longer and get their temperature taken. He wondered why, on cool mornings, bumblebees opted for jewelweed, fireweed or milkweed, visiting asters or goldenrod only when the air warmed. He ruined a fishing trip with an old Maine friend, becoming so preoccupied taking bumblebee temperatures in the sunshine and again when clouds moved in, cooling the air, that they never launched their canoe. (In case you're wondering how this sampling is accomplished, you insert, very deftly, a tiny, metered temperature probe into the thorax.)

His mind still focused on bumblebees, in 1971 he joined the faculty of the University of California at Berkeley. Ten years later, when he moved to the University of Vermont, to get closer to his beloved Maine, he continued chasing bumblebees. Heinrich also pondered Adam Smith's writings on capitalism. And, as data and graphs accumulated,

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he brought into focus a zoological *Wealth of Nations*, describing bumblebee-flower transactions as the insects seek out nectar-rich blossoms in the meadow marketplace.

Bumblebees, Heinrich showed, warm their thoraxes to fly in chilly air by shivering their flight muscles. Each bee aims to invest that expenditure of energy to maximize her "profit" in nectar and pollen gathered for the colony. When the air is cool, a bee must conserve energy, optimizing her profits by visiting the most nectar-rich blossoms, such as fireweed. She ignores lower-payout flowers—asters and goldenrod, for instance. When it is warm, she can profitably visit flowers that offer less nectar.

In fields surrounding his second home, in Maine, Heinrich holds his infant son, Eliot.

Heinrich found that a bee requires about 50 initial visits to various blossoms to learn which flowers offer the best payback. By gluing numbered tags to bees' thoraxes, he tracked individuals, discovering that most bumblebees become efficient by "majoring" in certain flowers and "minoring" in others. For example, one may visit mostly jewelweed, with less frequent trips to goldenrod.

Specializing is efficient because flowers of different species present nectar and pollen differently. Each requires specific harvesting skills. So, to collect a wild carrot's pollen, as Heinrich has reported, the bee must walk rapidly across the inflorescence, pressing its body down to pick up pollen from the surface of many tiny florets. To collect a wild rose's pollen, however, the bee must grasp groups of anthers, vibrate them to shake the pollen loose, then turn and grasp a second group of anthers.

It astonished Heinrich to discover that plants—manipulative, duplicitous, Machiavellian—call the shots. Bees are mere ambulant tools, unwitting dispersers of pollen. Plants pay bumblebees for their pollination services with nectar, an otherwise useless liquid. But a plant's game is to cut "costs" by minimizing its nectar offering. Too little nectar and bees shun you. Too much and they concentrate on the blossoms of one munificent plant, spreading no pollen.

Some orchids produce no nectar. Instead, they mimic other nectar-producing flowers. Still other orchids mimic female bees or wasps in size, shape, color, even scent, thus attracting males.

It is most productive for plants to direct bees to virgin blossoms, away from blossoms bumblebees have visited and pollinated. Some plants signal via aroma that a blossom is unvisited. But bumblebees soon learn a wild rose has lost its pollen when it dims from red to pale pink. Some dying, and so probably pollen-depleted, flowers change ultraviolet reflectivity, which bees can detect.

Heinrich over time had been developing a theory: all creatures that run, fly, or otherwise move quickly and continuously, and are sufficiently massive to retain the extra heat their movement generates, will evolve a mechanism for regulating high body temperature. He and his UCLA thesis adviser confirmed the theory in Kenya, in their work on dung beetles. They were ideal subjects, with species ranging from smaller than houseflies to bigger than sparrows.

An African night. On the plain, lions roar. Heinrich, waving a thermometer, chases dung beetles (SMITHSONIAN, June 1997). Just as his theory predicted, midget dung beetle species are cold-blooded, giants warm-blooded. These beetles knead animal dung into balls, rolling them off to eat or to feed their larvae. Heinrich found that even a species' dung-ball-rolling speed depends on its temperature: "cool" beetles (about 82 degrees F) roll their balls two inches per second; "hot" beetles (about 110 degrees F) roll their balls eight inches per second, four times faster.

Scores of scientific papers later, Heinrich had created a substantial body of work on insect thermoregulation. He had looked at "Thoracic temperature variations in the onset of flight in dragonflies" and "Flight of winter moths near 0 degrees C." He had probed flies, wasps, honeybees, carpenter bees, butterflies and Arctic caterpillars.

Then, on October 28, 1984, a foggy morning, Heinrich was hiking near his Maine cabin. He had headed to these woodlands at age 17, running away from the Good Will School. Now he was a University of Vermont biologist, an esteemed author of books, scientific and popular. This 300 acres of mountain forest was his. Whenever he could, he came to this cabin with no electricity, no running water, to immerse himself in biological questions.

But it was too late in autumn for bumblebees. Besides, he was moving well beyond his abiding interest in thermoregulation. And so, on no special mission, he hiked along a foggy ridge, where mosses under the red spruces shone with moisture. Then he heard a cry that always electrified him—the wild "quork" of ravens.

He found 15 of them, feeding on a moose a poacher had hidden. The wary birds fled. And so Heinrich sliced off some moose for himself and roasted it while he waited for the birds to come back. There was a little mystery here,

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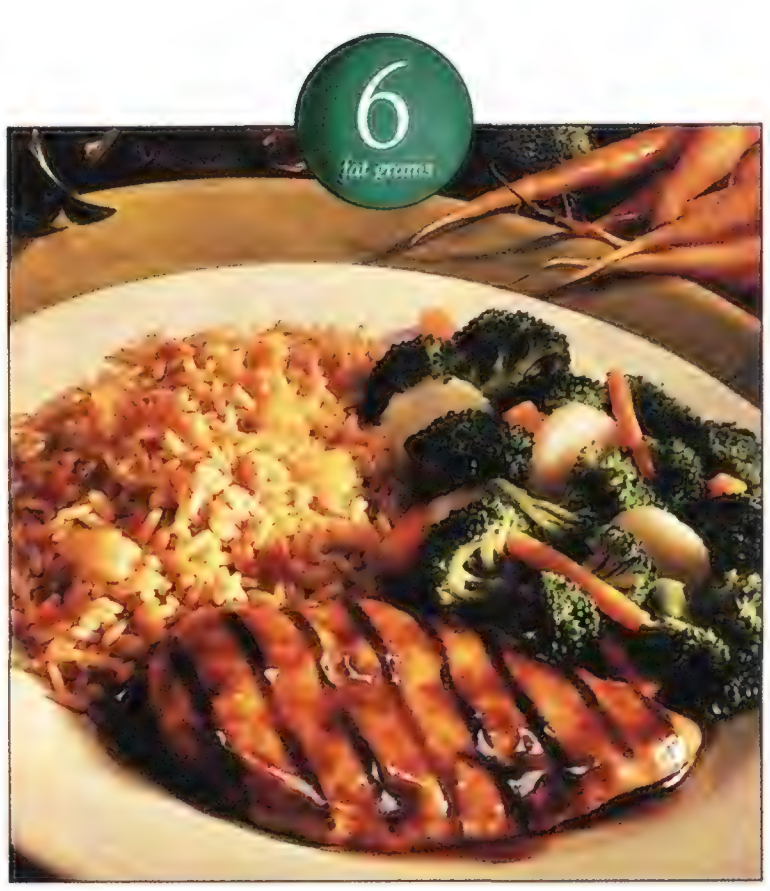

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and he thought he would spend a weekend or two, solve it, probably write up a short paper for a scientific journal. Besides, as he would later write in *Ravens in Winter*, "there is no greater pleasure than eating roasted moose while resting under a spruce and contemplating ravens."

What piqued his curiosity was the ravens' calls. One yell, he knew, they made only at kills like this. Why? Here, for instance, was a hidden moose carcass. One raven might find it. Perhaps a pair. But ravens are solitary. How had 15 found it? Could the first raven to find it have called in the others? Why would a solitary bird share its food?

Studying ravens, Heinrich records data from atop a 50-foot red spruce lookout.

More than a decade later, Heinrich is still working on his "quickie" project. He studies ravens at his Vermont home and at his Maine cabin (where he records data from a 50-foot red spruce lookout), and as far off as the Arctic. On dark November mornings and in January blizzards, he drives Route 2, from Vermont to Maine. In the back of his pickup ("This car stops for roadkills," proclaims the bumper sticker) are dead goats, sheep, calves. Sometimes a farmer gives him an entire cow.

Heinrich's cabin in Maine is reachable only via a footpath that snakes a half-mile uphill. He cheerfully slogs up here through knee-deep snow toting a hundred pounds of dead sheep on his back. He stops for roadkill to feed captive ravens in his 1,600-foot-around aviary. But the goat and sheep carcasses are to attract wild ravens.

It is a winter morning, the temperature hovering around zero. From a blind, Heinrich watches ravens hop toward a carcass, as always cautious as they approach food. Finally they feed raucously. Heinrich suspects such carcasses may be raven singles bars, where young males show off for the females. Satiated, the ravens frolic, sledding their bodies through the snow. In his aviary, Heinrich has observed ravens playing at tug-of-war, with sticks, or on their backs, feet up, rolling like goofy Labrador retrievers.

Over the years, Heinrich's watching has paid off. Ravens do share food. At least, young ravens do. These raven youths are solitary rovers, although at night they gather in roosts for protection. When a youthful raven finds a carcass, Heinrich discovered, it calls in its friends, giving the "food here" yell.

Mature ravens mate for life, sometimes 40 years or more. Heinrich has watched loving raven couples silently "holding bills." Such a pair will mark off a territory, claiming any carcasses on their land, chasing away younger ravens. Raven youths, Heinrich discovered, call in others to achieve strength in numbers. They become too many for the dominant pair to chase away. Thus, everybody gets to eat.

Heinrich now studies other raven

behaviors. For one thing, the birds are skilled mimics. One captive, he notes, actually learned to say "Nevermore." A raven at Duke University could do a tone-perfect imitation of a motorcycle. And one observer described a raven so impressed by a highway crew's blasting that it later announced in a clear voice: "Three, two, one, kaboom!"

"Right now I'm studying ravens' mental involvement," Heinrich says, on his Vermont deck, back from collecting wood-frog eggs. He has visited Baffin Island, to talk with Inuit hunters. "I'm interested in how ravens interact with carnivores, like wolves and people," he says. Ravens' interactions with carnivores have offered a window on their behavior, and perhaps their thinking, because ravens depend on large predators, like wolves, to kill game and slice open the tough skins. But wolves are dangerous. "Ravens must be able to *predict* what a wolf will do," says Heinrich. "How do they do it?"

He is also looking at other aspects of raven thinking, such as food caching. In the sprawling aviary he built behind his Maine cabin, he has found that ravens notice where other ravens cache extra food. Later they steal it. Once he put a wild raven into the aviary with ravens he raised. When he put out food, the tame ravens chased the wild raven away. "It lived only by recovering other ravens' caches," Heinrich says. The wild raven demonstrated strategic remembering. Just after hiding food, ravens fiercely defend their caches. "So the wild bird would recover their caches from several meals back," says Heinrich.

He gives ravens IQ tests. "If I dangle a string from a horizontal bar, and tie a morsel of food to the end of it, how will a raven get that food?" he says. The astute raven perches on the bar, reaches down with its bill and draws up a loop of string, holds it with one foot, draws up a second loop, and so on, until the morsel is within reach. "Some ravens figured it out within minutes, which I thought was extremely remarkable; there are 30 or so steps that must be repeated in the correct sequence, and they got it right the first time," says Heinrich. "Food on a string is unlike anything in their natural habitat, so it isn't instinct." He also tested the ravens' cousins, crows. "They couldn't do it," he says. "They'd peck at the string a bit, then ignore it." Thinking, he allows, is hard to study. "Psychologists can't agree on a common definition of intelligence even for humans," he says. "It's not just learning, and it can't be just complex behavior: insects have that.

Slogging into a pond, Heinrich exhibits characteristic energy in search of subjects.

What does keep cropping up is the idea of flexible behavior."

Heinrich drives back and forth with his raven protégés, between his Vermont home and his Maine cabin, where he especially likes to work. Sometimes he runs 20 miles before lunch. Sometimes he augments his studies with less directed work, such as calculating the cabin's cluster fly population at 12,800, which came to "nine and a half cups full, level." He has solved the problem of dishwashing in the cabin's water-scarce environment by discontinuing the washing of dishes. He boils his meals in the big red kettle on his woodstove and eats his meals out of the kettle. It is scientific. As Heinrich notes in his journal, "Once or twice a day it gets brought to a boil, and then all the bacteria are killed." And he treats visiting students to his favorite recipe: "To prepare mice, you have to first thaw them out and pull the skins off and the guts out. Then you wash them, bread them carefully, and braise them lightly in olive oil in the black skillet."

Up before dawn, crouching in a blind at a windy 20 below, he waits for ravens to descend on a dead cow. On one such January morning he noted in his journal, "I'm as close to heaven as I think I'm ever going to get."

Now, however, he is in Vermont, in the spring. Buds are reddening the maples around his home. In the woods, patches of snow are still melting into the moss. Heinrich, listening to ravens in the distance, is thinking about his research. "I like to work with what's right next door—I'll study ravens for the rest of my career, and I may add crows and blue jays," he says. Besides studying raven thinking, he has begun to examine the extensive raven vocabulary—*quork*, *korr*, *rrock*, and trills, yells and knocking noises. "I don't yet know what they mean," he says. "One impression I have is that calls express different intensities of emotion, so that a call they use when a raccoon is approaching on the ground expresses more anger than another call when a hawk flies over." He executes a few "quorks" and "korrs," simulating degrees of raven anger.

For a moment, he is silent. Maybe he is remembering a feral boy running through a European forest, hunting mushrooms and beetles. "I'm in biology," he says, "for the fun of it."

Writer Richard Wolkomir and photographer Richard Howard have together produced a number of SMITHSONIAN *stories.*

Today pedestrians crowd busy Nowy Swiat; but in 1945 (inset) only a desolate few walked the same street. Since then, Varsovians have rebuilt its elegant 19th-century homes and shops.

BY RUDOLPH CHELMINSKI

Warsaw

the city that Would Not Die

AFTER HITLER OBLITERATED IT, THE POLES PUT IT BACK TOGETHER, BRICK BY BRICK

SMITHSONIAN

IT WAS ABOUT 20 YEARS AGO THAT I MET MY UNCLE Zbigniew for the first and only time. He was an old man by then, very poor, very dignified, living in a single room on the back side of a gray apartment block in Warsaw. He had been a cavalry officer during the war, one of those famous Polish lancers who were said to have charged German tanks on horseback. (Sorry to deflate a great legend, but it's not true. "We weren't idiots," he said.) Now he was living out his last years on the pittance of a veteran's pension.

I often think of Uncle Zbigniew when the subject of Warsaw comes up, because the scarcely believable twists and turns of his life are such an apt metaphor for the capital city itself. He had lived through adventures and malevolence such as most Americans cannot even imagine and yet remained the perfect ancien régime gentleman, thoughtful, attentive and courtly, as if nothing much had really occurred. Like the city, he had survived against all logic.

"Do you know the Old Town?" he asked me. "Permit me to show you." We rode a bus past squat, depressingly uniform concrete structures, angling northward over the street called Nowy Swiat (New World) and its unpronounceable continuation, Krakowskie Przedmiescie. Along Nowy Swiat, the style and quality of most buildings began an abrupt sea change, from

Before the Old Town Market Square could be restored, workers first had to clear away 17 million cubic feet of rubble.

postwar Soviet quick-lick utilitarian to an otherworldly elegance. Three- and four-story stone town houses were interspersed with neoclassical, baroque and neo-Renaissance palaces, churches and monuments. As we approached the Stare Miasto, the Old Town itself, the concentration of architectural masterworks became so heavy that we might as well, I thought, have been traveling through an open-air museum.

Little did I realize how accurate my impression was. This museum was authentic—but its exhibits were more reconstructions (or re-creations) than true originals. The grand old historical buildings I was admiring were in fact no more than 15 or 20 years old. I was undergoing a concentrated lesson in the difference between Warsaw and the rest of the world's major cities.

Any number of the great European capitals are bigger, richer, more industrialized and older. Warsaw (pop. 1.6 million) has been Poland's capital for a mere 400 years. Nor is beauty its strong suit. In spite of its promising location on a bluff above the Vistula River in central Poland, Warsaw never could compare with such stunning Central and Eastern European capitals as Budapest, Prague or St. Petersburg, and certainly could not come close to jewels like Paris, Rome, Vienna or Stockholm. No, what sets this place apart from all the others is its stubborn perseverance despite horrible adversity and then its reemergence, perhaps not unchanged but still recognizable, with the central core of its identity intact.

Commenting all the way, Uncle Zbigniew led me past the heroic Column of Sigismund III to the Old Town,

which is as much the heart and tourist center of this city as Budapest's Castle Hill, Prague's Old Town Square or Vienna's Stephansplatz, places where history fairly leaps out at you, are of theirs. Weaving a path through picturesque lanes and cul-de-sacs, he marched me across the Old Town Market Square, where narrow-shouldered 17th-century buildings decorated with polychrome motifs hunched together to peer down at cobblestones, shops and restaurants below, and finally to the turreted barbican and brick walls of the old city's ramparts, from which we could admire the view over the Vistula. It took a deliberate act of will to accept that nearly all of this was not original, but a carbon copy of old Warsaw, painstakingly rebuilt stone by stone, brick by brick, during the early postwar period, after a destruction that was, for all intents and purposes, total.

In 1596, Sigismund III Vasa, king of the vast Polish-Lithuanian union, established his new capital here. In the following centuries, siege after siege underlined Poland's impossible geographical position on an indefensible plain with Russians to the east, Teutons to the west, Swedes to the north and Austro-Hungarians to the south. Time after time, Warsaw was assaulted, taken, pillaged and subjected to the policies and edicts of its neighbors. But it was not until the very last assault, the one that started World War II, that the city met the full force of its tragic destiny.

Like Carthage in the Punic Wars, Warsaw was targeted for depopulation and destruction. Visionary as always, Hitler designated the vacated site to be the location for a small to midsized outpost of his empire, laid out by one of his preferred architects and peopled by Germans only, with a limited contingent of indigenous slave workers on the other side of the river in the district of Praga—the servants' quarters, as it were. Of all World War II's martyred cities, Warsaw was the only one that was deliberately and scientifically leveled like a public works project.

Warsaw's Golgotha began during a 28-day siege by the German Army in 1939, when shelling and bombing killed 40,000 civilians and 6,000 soldiers and flattened about 15 percent of the city, notably burning out its equivalent of Buckingham Palace or the White House: the Royal Castle where Sigismund III and his successors had lived since the 17th century. That, however, was only the first step. During the five-year occupation that followed, the Nazis proceeded with a systematic process of state robbery, calling in men of intellect and culture to inventory objects of value and supervise their shipment back to Berlin.

The late Stanislaw Lorentz, director of the National Museum in 1939 and again after the war, told me many years later about his surrealistic experience with one Dagobert Frey, a fellow art historian with whom he had enjoyed a pleasant scholarly visit in Germany only three months before the war began. Scarcely had the Wehrmacht arrived in town than Frey appeared at the museum, accompanied by an SS officer. "Where are your Canalettos?" he shrieked.

After that, things got only worse. When Hans Frank, Poland's new governor-general, arrived, he led a delegation of German officials through the burned but still-standing Royal Castle, setting the example by bashing the head off a gilt Polish eagle and then leading his colleagues through the rooms, hammer in hand, smashing mirrors, putti, ornate moldings and anything else that would break.

By November 1940, the Germans had created the Ghetto, herding thousands of Jews into a section of Warsaw near the Old Town and walling

During the first ten postwar years, there was scarcely an adult or youth who didn't participate one way or another: sweeping, digging or passing bricks.

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Works by Canaletto the younger, like this one (top), were a great aid in rebuilding Zamkowy Square (above) and other sites.

it up. In the Ghetto Uprising of April and May 1943, some 13,000 Jews were killed and the surviving 56,000 were transported to the death camps. Fifteen months later, with the rapidly advancing Red Army's first units just across the river, the Polish resistance unleashed a general insurrection throughout Warsaw.

Historically, insurrections have been something of a Varsovian specialty, causing vexation to invading powers. "Warsaw is the source of all our misfortunes," lamented Frank in 1943, "the focus of all disturbances, the place from which discontent is spread through the whole country."

So it was in 1944, but the uprising proved to be a tragic mistake. The plan was to seize the city just as the Soviets began arriving. The AK (Polish Home Army) and its civilian supporters outnumbered the occupiers but had only light weapons and precious little ammunition. The fight lasted 63 days, but the Red Army never budged from its position across the river. After a repression of unspeakable brutality, the last remnants of the AK surrendered on October 2. Some 20,000 soldiers and 225,000 civilians had died.

Still the Red Army held back. Having allowed the Germans to eliminate the AK as a potential anti-Communist force, Stalin now gave them three more months to finish the job of eliminating Warsaw. The half-million or so persons still living there were expelled. By bulldozer, flame-thrower and dynamite, at least 900 artistically significant monuments were obliterated. In the half-ruined Zamoyski Library, 100,000 original prints, maps and manuscripts were burned, and the municipal archives met the same fate, as did the 300,000 volumes remaining in the public library. The Royal Castle, although burned out and roofless, was still standing. Carefully, with all the skill of the excellent engineers they have always been, the Germans drilled 10,000 holes in the walls for dynamite charges. At detonation, the walls dropped like a curtain, neatly sliced off at the base. So it went for the rest of the city.

By the time the Red Army finally moved forward, Warsaw was a silent field of rubble without gas, electricity or water. The rare buildings not blown up were roofless and gutted by fire; the ruins were mined and booby-trapped. The devastation was so appalling that many voices called for simply abandoning the site and building a new capital elsewhere. But like migrating birds, the survivors slowly drifted back, and within four months there were 366,000 in the city, living in cellars or simply in the lee of walls.

Warsaw began rebuilding. It was a strange, oddly contradictory city that grew up during that first heroic period of reconstruction. One way or another people had to be housed, so any walls that were sound enough to bear weight were patched up, roofed and slapped together into living quarters. They were later joined in huge quantity by the soulless Soviet-style prefab concrete blocks that blight urban landscapes from Berlin to the Bering Sea. The apartments were ugly, depressing and small (ten square yards per person), but at least they were warm and dry, and for Poles in those days that was the height of luxury. Stalin underlined Russia's domination of the capital by "offering" the ineffable Palace of Culture and Science, a monstrous tower that resembles the wedding cake buildings that loom throughout Moscow.

Completed in 1955, the palace is located smack in the middle of town, and its 24-acre site is a perfect example of Stalin's passion for gigantism. The absurd structure instantly became an endless source of wisecracks. (Q: Why is the 31st-floor observation platform such a popular gathering point for city natives? A: Because it is the only place in

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town from which you can't see the Palace of Culture and Science.) The same Varsovians who had so annoyed Frank with their irreverence displayed their love of irony by installing in the building's basement not a Lenin Library but a nightclub featuring Communism's best strip show.

There was no irony, though, in the massive undertaking to rebuild historical Warsaw. Wresting their national identity back from the ruins was a hugely ambitious project, but the Varsovians threw themselves into it enthusiastically. During the first ten postwar years, there was scarcely an adult or youth who didn't participate one way or another: sweeping, digging, passing bricks or simply chipping in. More than a third of the cost of rebuilding was met by popular donation, and not a zloty came from either superpower. Or from the Germans. They were not asked.

Clearing paths through the rubble and laying out a new city plan, the workers widened the streets beyond the old horse-and-buggy scale to accommodate the anticipated growth of automobile traffic. Likewise, the new Warsaw grew around park space that had been deliberately tripled over prewar dimensions. Notable among them is the Royal Lazienki (Baths), one of the world's great urban parks, where a profusion of palaces, lakes, fountains and promenades, lined with noble oaks, maples and chestnuts, offers a sylvan backdrop to open-air concerts.

For the reclaiming of Warsaw's architectural history, the Old Town naturally had top priority. Artisans had photographs and prewar architectural plans on hand, but since they were free to choose the period of their reconstruction they regularly consulted the "Canaletto" cityscapes plundered by Frey and later recovered from the ruins of the Third Reich. (In fact, they were Bellottos. Bernardo Bellotto, Canaletto's nephew, studied under his uncle and assumed his illustrious name when working in the east.) The re-created Old Town took a 17th-century form that deliberately included architectural "mistakes" by the original builders. A lack of modern equipment proved to be something of a boon, because it obliged the masons and carpenters to work according to ancient methods.

Next in line was Warsaw's innumerable collection of churches and the private palaces of noble families that once lined the fashionable streets along the Royal Route leading southward from the Old Town—the very ones I had admired through a dirty bus window with my uncle.

When the job was completed, there was no way that a less than totally expert eye could tell the difference between these resurrected buildings and the originals. Today, the long walk from the business district to the Old Town, past the Branicki and Zamoyski palaces, Warsaw University, the Academy of Fine Arts, and the Radziwill and Potocki palaces, constitutes a tourist attraction comparable to the best that Central Europe has to offer. More than this, though, it is a masterpiece of urbanism that has, quite literally, given the city back to its people.

He marched me across the Market Square, past narrow-shouldered 17th-century buildings, to the turreted barbican and brick walls of the old city's ramparts.

When I went sightseeing there with my uncle, the wide cobbled square at the edge of the Old Town was barred on the eastern side by a major construction project. The four-story stucco walls and clock tower of the Royal Castle were rising from the rubble where they had lain for more than a quarter of a century. I was struck by the presence of a capacious, transparent bin, about a yard by a yard, in the middle of the square. It was a donation box filled with banknotes: popular contributions for the castle. The

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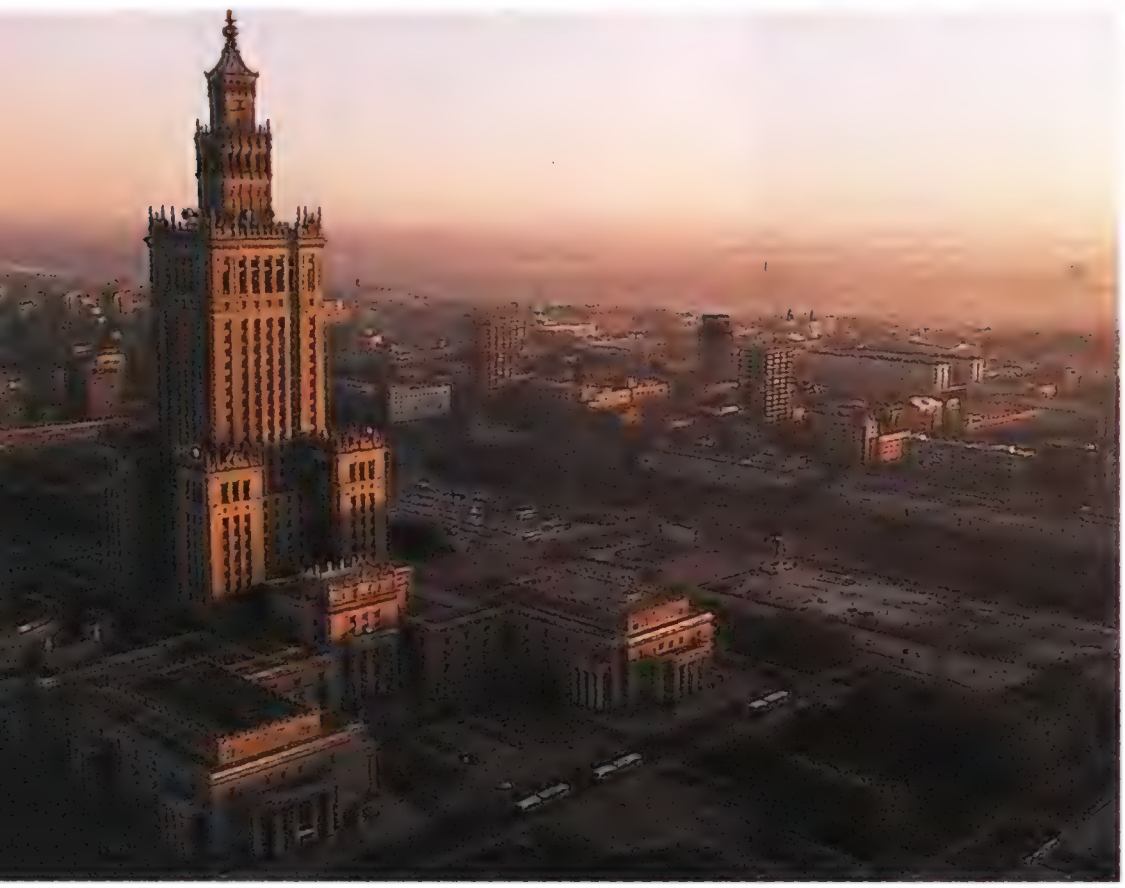

The fast-growing business district (top) is overshadowed by the colossal Palace of Culture and Science (above), a towering reminder of Soviet dominion.

Communist leader of Poland at that time, Edward Gierek, had authorized reconstruction of this most "reactionary" of architectural symbols of nationhood, but the entire project was funded without government help: a national subscription, piggy banks in schools and factories, plus contributions from abroad added to the take from the money bin.

By the mid-1970s, the castle's Renaissance-style pentagonal outlines were complete, and the interior was crawling with artisans plastering, painting, laying gold leaf and parquet, and installing moldings, chandeliers and brass work. The new-old motif leaped out in odd, unexpected ways: half a window frame, a worn stone lintel, a piece of hand-carved floral molding no bigger than a man's fist, a soot-blackened capital atop a pristine white marble column. The cornices, portals and window stonemasonry salvaged from the ruins were conspicuously reinserted in their original positions, underlining their authenticity and the route they had run.

Warsaw's national symbol, complete with its original tapestries and Bellottos, was finished and dedicated in 1984. Not surprisingly, the castle rapidly became the city's most popular historical monument. A few more years were to pass before Communism entered its final free fall, but color slowly began creeping back into the rest of Warsaw in the early 1980s as limited private enterprise became tolerated. After 1989, the creeping renewal turned into a sprint. The city now glows with neon ads for good old degenerate capitalistic wares. Yankee fast-food horrors of every ilk abound. A clutch of gleaming new downtown hotels and high-rise office buildings reflects the flood of newly arrived foreign investors who have come here to exploit Poland's booming capitalistic energies and the 40 million eager consumers who have already turned the country into Central Europe's economic powerhouse.

"Offices, offices, offices," Wojciech Matusik was saying. "Everyone wants to build offices!" Balding, bespectacled and bemused, Matusik sat surrounded by maps, plans and reports in a spacious, high-ceilinged bureau on the 13th floor of the Palace of Culture and Science. Director of Warsaw's Land Development Department—in effect, the guy in charge of planning—he was bemused not so much by the rapid pace of change but by the near-impossibility of making the city accommodate to it in an orderly way. The problem, ironically, is too much democracy.

"After Communism, we set up a new, decentralized administration system that divided Warsaw into 11 independent *gminas*, or communes. Each commune has its own budget, and many of them have big surpluses, but they don't give enough back to the city, which is a separate entity. Warsaw City is responsible for all the public services—water, sewage, transportation, garbage, street cleaning and so on—but we don't get the money to pay for it all. The result? Our public services are terrible."

He smiled apologetically as he recited the litany of municipal insufficiencies: air pollution, traffic-choked

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Here, amid the tranquillity of the Royal Lazienki, a 200-acre park of palaces, ponds and grand old trees, it is hard to imagine the violence that Warsaw endured.

streets, youthful violence, overcrowded buses, poorly maintained pavement and a host of other plagues familiar to mayors everywhere. When I ventured to temper his dismay by testifying that I had seen far worse conditions in other cities, he refused to be outdone, and escalated.

"Well, water, then?" he asked. "Ours is so loaded with chlorine that many refuse to drink it, and they say people with very delicate skin come out of a bath with a rash. And sewage? Our treatment plants cover only 60 percent of the city—we dump 40 percent untreated into the Vistula. It's got to be the most polluted river in Europe!"

Touché, but I still had to disappoint Matusik by insisting that I always felt perfectly safe on Warsaw streets, that they were generally cleaner than those of most cities, that the air pollution was minor-league, the homeless apparently nonexistent and the natives charming. Warsaw is possibly the last place on earth where gentlemen still routinely bow and kiss ladies' hands and the ladies don't laugh or sue them for sexual harassment.

I left Matusik still searching for more bad things to say about his city and strolled over to the Stare Miasto, where Deputy Mayor Leszek Mizielinski, lucky man, held office in a beautifully restored palace: creamy walls, gilt moldings, brass-and-crystal chandeliers, Persian rugs. An ex-Communist like his boss (Mayor Marcin Swiecicki was first secretary of the party's central committee before he saw the capitalist light), he seemed an ideal candidate to deliver an upbeat speech about how grand everything was in the city they were administering. He started out promisingly enough, but not even his penchant for propagandizing could prevent him from falling into the same kind of municipal self-deprecation as the modest Matusik's. "Unfortunately, I agree with those who say Warsaw has no atmosphere," Mizielinski sighed. "It's like many other cities, but it's nothing special. And the people are rude."

So much for boosterism. Although they are hurling themselves headlong into Western-style consumerism, Poles clearly have not yet mastered the West's propensity for public relations, and I can only thank them for it. Dr. Lech Krolikowski, a soft-spoken, erudite engineer and historian who directs the Friends of Warsaw Society, carried this endearing eccentricity a step further by praising other cities. "Warsaw is less attractive for tourism than Vienna, Prague or Budapest," he said. "Prague and Budapest were lucky enough to be spared in the war. We weren't."

One by one, he dropped on the table a series of snapshots he had taken of the "new" Warsaw built under Communism: streets without sidewalks, shops or cafés; muddy courtyards; steel crowd-control barricades. "The Communists' technology didn't allow them to build anything but matchboxes," he said. "Do you know that in those days there were only two cafés in all of Warsaw? Now there are hundreds, and more are opening every day."

Aha—I had caught him saying something positive about his town! There was no escaping the reality: Warsaw is on a roll. Life, color and class have returned to the streets, and it is no longer the Old Town alone that is worth a visit.

"It's a good place for young people now," said Ewa Kielak Ciemniewska, editor of Warsaw's English language newspaper, the *City Voice*. "The sad years are behind us."

Last year Warsaw marked its 400th anniversary and its symbolic rebirth with a summer-long celebration that included a major Caravaggio exhibition in the National Museum, a film festival, an international book fair and a Mozart festival. There were concerts by Ray Charles, Sting, Tina Turner and others. Toward the end of the year, when I found myself stuck in a shrieking mob behind a police cordon shielding the arrival of Michael Jackson at the glistening glass entrance to the Hotel Marriott, I could only conclude that Warsaw, for better or for worse, had finally arrived as a major international destination.

Hadn't it, Mr. Mizielinski? The deputy mayor sighed again and looked sheepish when I cornered him with the question. "Well, I suppose we have come a long way," he said. "But the process isn't over yet. We've still got a lot more to do."

European-based writer Rudolph Chelminski, a longtime contributor, has written about the Maginot Line, French baseball and Ukraine.

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Dove's *Sunrise III* (1936) radiates an energy far exceeding its three-foot width.

The Quiet Man

FROM THE OUTSIDE, ARTHUR DOVE'S LIFE APPEARED OUT OF KILTER, BUT HIS INNER VISION SHONE THROUGH ◆ BY AVIS BERMAN

"I SHOULD LIKE TO ENJOY LIFE," SAID THE painter Arthur Dove, "by choosing all its highest instances, to give back in my means of expression all that it gives to me, to give in form and color the reaction that plastic objects and sensations of light from within and without have reflected from my inner consciousness. . . . It should be a delightful adventure." From the evidence of his exuberant, pulsating abstractions distilled from the natural world of moon, sun, water, land, plants and farm animals, in which he was so at home, Dove surely savored an inner life of profound intellectual and spiritual richness, although the external circumstances of his adventure would strike anyone else as excruciatingly difficult rather than delightful. Fencing against privations and distractions that would have suppressed many a lesser talent, Dove evinced a hardihood as admirable as his artistic gifts. His journey, during which he created a personal symbolism that implied an intimate connection between himself and the cosmos, was a bold and radical one: not merely the first American to paint a nonrepresentational painting, he was also the only painter of his generation to persevere with abstraction and follow it to its conclusions. Dove's courage and innovation, his directness in transmuting his response to natural stimuli into art, reverberate to this day. His work, homespun yet spiritual, still speaks to contemporary artists. Among the ones who have been touched by him are Kenneth Noland, Frank Stella and Bill Jensen.

Although Dove (1880-1946) is now acknowledged critically and commercially—his status as a pioneer is unassailable, and prices for his paintings start in the six figures—he has remained the quiet man of American modernism. His voice was so soft that someone nicknamed him "the whispering kid." Much of his life took place away from the hurly-burly and headlines of New York City, on either a farm or a boat. Accordingly, his dealer, Alfred Stieglitz, as well as sympathetic critics, tended to promote him as a bucolic spir-

# of American Modernism

it, a recluse and a mystical moon gazer, as opposed to a contemplative, complex intellectual who was keenly aware of international artistic and literary currents. Like his personality, his art was less dramatic than that of his fellow Stieglitz artists Georgia O'Keeffe and John Marin, whose pictures commanded in the thousands of dollars when Dove's were going in the hundreds—if a buyer could be found for one. Of the four most progressive museums in the United States collecting American contemporary art during the 1930s and 1940s, three of them—the Museum of Modern Art, the Whitney Museum of American Art, and the Addison Gallery of American Art—purchased nothing by Dove during the artist's lifetime. The same held true for the more conservative survey museums such as the Metropolitan Museum of Art and the Art Institute of Chicago. Only the Phillips Collection in Washington, D.C., whose founder, Duncan Phillips, was an avid supporter, acquired Dove's work while the artist was around to benefit from it.

The most radical modernist of his generation, Dove blazed a trail that was later picked up by the New York School.

Perhaps most debilitating of all for Dove in regard to the public view of him was the oversimplified conception of the artist as a mere son of the soil. That narrow casting, along with the extreme fragility of many of the works, has meant that a comprehensive display of his art last occurred in 1974. This situation has just changed, however, with "Arthur Dove: A Retrospective Exhibition," which opened fittingly at the Phillips Collection on September 20, 1997; after closing on January 4, 1998, the show will travel to three other cities. To coincide with the retrospective, the Wichita Art Museum, which owns 28 mixed-media and watercolor sketches by Dove, has organized a show with the American Federation of Arts that will tour to museums in Connecticut, Texas, Maryland and California.

The Dove retrospective proposes a distinct point of view. The most uncompromisingly abstract paintings are spotlighted, rather than examples with more apparent representational elements in them. "I don't see Dove as a neglected figure, but as a misunderstood one," says Phillips Collection curator Elizabeth Hutton Turner, who co-curated the exhibition with Debra Bricker Balken, an independent scholar, and William Agee, a professor of art history (the Addison Gallery and the Phillips Collection co-organized the show). "We want to show him as a premier abstractionist, as the most radical modernist of his generation, who blazed a trail that was later picked up by the New York School. Dove found a particularly American avenue into abstraction. Quite independently he put these ideas together that led up to his unprecedented forms." Turner also stresses Dove's interest in the giants of European thought. His diaries reveal their share of references to Joyce, Lawrence, Einstein and Spinoza, and he carefully studied the art of Klee and Mondrian.

This ceaseless appetite for invention emerged from the rural community of Canandaigua, New York, in the central part of the state. There Arthur Garfield Dove, who was named for the Vice Presidential and Presidential candidates on the Republican ticket that year, was born on August 2, 1880, to William George and Anna Chipps Dove. The son of a brickmaker who became a wealthy contractor and real estate developer, Arthur grew up in Geneva, New York, in the Finger Lakes region. He took piano and painting lessons, and was the pitcher for his high school baseball team, graduating in 1899. A career as a lawyer or businessman was envisioned, and after attending Hobart College for two years, he transferred to Cornell University to study law. But Dove's conventional existence had already been called into question. When Dove was a boy, one of his best friends was a neighbor named Newton Weatherly, whom everyone else regarded as the village eccentric. Weatherly farmed to make a living, but he was a passionate naturalist and painter, and he taught Dove how to hunt, fish, identify plants and otherwise live off the land; he encouraged his protégé to follow his inclinations as an outdoorsman and artist. This early guide and mentor was the first of several benign patriarchal figures whose example fortified Dove, giving him the courage to stand up to William Dove's growing opposition to the direction in which his son was drifting.

At Cornell, Dove dropped his law studies in order to take courses that would equip him for a career as a commercial illustrator. William Dove was infuriated until he saw the money his son could make—it was the golden age

The spiraling lines of *George Gershwin—"Rhapsody in Blue," Part I* recall the clarinet solo that opens the piece.

One of the finest of Dove's collages, Goin' Fishin', *bubbles with a Huck Finn mood of fun-loving rebellion.*

of the magazine illustrator, and successful ones like Charles Dana Gibson and Maxfield Parrish were lavishly paid and lionized. After establishing himself in Manhattan as a contributor to *Harper's*, *Scribner's* and several other popular magazines, Dove married Florence Dorsey, the "girl next door" from Geneva, in 1904.

Dove was earning plenty of money and absorbing a heady new milieu, meeting everyone from the painters John Sloan and William Glackens to the cowboy star William S. Hart. He was expected to be contented, but something was missing; he saved up $4,000, and that sum, plus a contribution from a temporarily mollified William Dove, enabled him and Florence to go to Paris in the spring of 1908. Arriving in the capital of art in the midst of the Fauve and Cubist explosions, Dove met many other questing young Americans, including John Marin, Alfred Maurer, Jo Davidson, Arthur B. Carles and Max Weber. These artists were anchored to Paris, preferring to imbibe the gospel of modernism in the cafés and studios, but urban pleasures did not hold Dove. Most of the time he journeyed outside the city to paint Impressionist landscapes. He and Florence migrated as far south as Cagnes-sur-Mer, on the Mediterranean coast, where Renoir was still working. Dove could never sever himself from the countryside for any length of time; when he left Europe, he was producing still lifes and landscapes indebted to Cézanne and the Fauves.

The Doves returned to the United States in July of 1909, and as a result of his Parisian interlude, the artist announced that his goal in life was no longer illustration. He wanted to paint full-time; moreover, he resolved "to remember certain sensations purely through their form and color." Asked for an allowance to support this venture, William Dove refused to help, his disapproval unalterable. Arthur Dove would not be free from financial anxieties again for another 30 years.

On July 4, 1910, Arthur and Florence Dove had a son, William. After his birth, the family settled on a farm in Westport, Connecticut, where Dove planned to grow vegetables, raise chickens and sell eggs while pursuing painting in his "spare" time. An event that would equally transform Dove's future had already transpired in late 1909 or early 1910. Maurer had apparently arranged an introduction for his friend to Alfred Stieglitz, the acclaimed photographer, charismatic impresario and adamant champion of the vanguard. In 1905 Stieglitz had opened the Little Galleries of the Photo-Secession, at 291 Fifth Avenue, which was at first devoted to photography; in 1907 the exhibition space also began to show the most iconoclastic movements in painting, drawing and sculpture, and by now its name was simply "291." By the time Dove met Stieglitz, the latter had already organized the first Rodin and Matisse exhibitions in America and was showing Marin, Maurer and Marsden Hartley. Like the painters he promoted, Stieglitz had left the establishment behind him and was prepared to risk rejection and ridicule for the modernist cause.

Urban, autocratic, argumentative and flamboyant, Stieglitz did not share Dove's serene temperament, but the two men were united in their dedication to art, and in what Dove would eventually call "the idea"—that verisimilitude was insufficient for conveying the vibrant emotions that natural phenomena stirred in him. This principle supplied Dove with a coherence that informed his entire body of work. As the art historian Ann Lee Morgan has pointed out, when Dove met Stieglitz, he was doing competent but unoriginal Fauve still lifes; afterward, Dove abandoned illusionism for good and never made another completely representational painting again. He was in the process of metamorphosing from a follower into a leader.

Besides representing Dove, Stieglitz also stepped into the role of the sympathetic father that William Dove had renounced. Acknowledging this spiritual kinship, Dove often referred to Stieglitz as his "other old man" and testified, "I do not think I could have existed as a painter without that super-encouragement and the battle he has fought day by day for twenty-five years." When Dove's paintings were not selling, which was most of the time, Stieglitz helped him with occasional checks in lieu of the family assistance the artist never received.

Fired by Stieglitz's belief in him, Dove began redefining his approach to landscape painting, working on a group of oils and pastels of rural scenes and plants whose contours were distilled from but did not imitate nature. As in *Movement No. 1* and *Plant Forms* of 1911-12, Dove limited his palette to blacks, whites and earth tones, and reduced the number of shapes he used to essentials. Employing ovoid and spiral forms, he suggested the fecundity of vegetal life, which he saw as a metaphor for his own artistic creativity. The convoluted hills and valleys and surging leaves radiate profuse, animated growth and seem to spring from the same sources as the phallic urgency of Dylan Thomas' famous lyric cry, "The force that through the green fuse drives the flower / Drives my green age."

In February 1912, Dove received a solo show at 291. He exhibited ten of these organic pastels, which came to be known as the "Ten Commandments." As the first public display of abstract art by an American, they rained noto-

riety on Dove, first in New York and then in Chicago, where they were seen a month later. Manhattanites disdained the show as incomprehensible nonsense, but in the Midwest there was one buyer. The prescient collector Arthur Jerome Eddy, who would shortly write a book on Cubism and Postimpressionism, purchased a pastel.

Despite this breakthrough—Dove had propelled himself to the forefront of abstraction independently of Kandinsky, whose art he had not yet seen—Dove did not capitalize on it, hardly painting at all during that decade. His output dwindled primarily to a few charcoal drawings and pastels. Dove was pouring most of his energies into farming, and he even returned to the illustrating assignments he hated in order to gain a livelihood. Yet there was still very little money. A check for $150 from Stieglitz in December 1916, a godsend to Dove, was meant as encouragement, but Stieglitz despaired of his ever painting again.

In May 1917 Dove wrote to Stieglitz, "I hope to be painting again by the first of June . . . but the future for anything here doesn't look very bright." It was not very bright for Stieglitz, either. The entry of the United States into World

Tight quarters shared with Helen Torr aboard the *Mona* didn't dampen Dove's experimenting during the mid-'20s, from the collage *Goin' Fishin'* (top) to metallic paint for *Golden Storm*.

Dove debunks the pretensions of the critic, giving him a top hat, a monocle and an empty head.

War I, coupled with increasing financial pressures, led to Stieglitz's closing 291 just when Dove wrote to him. Dove was psychologically dependent on Stieglitz, who introduced and controlled all of his work, and the existence of the gallery guaranteed a safe harbor for it. The demise of 291 must have devastated Dove—he exhibited only sparsely until Stieglitz returned to dealing in 1925.

In the spring of 1917, Florence Dove hoped to alleviate their financial strain by running a teahouse with the wife of another artist in Westport, but she and her husband were no longer getting along. Meanwhile, the Doves had become friendly with another local couple, Clive and Helen Torr Weed; Clive Weed was a cartoonist, and the auburn-haired Helen, whom everyone called "Reds," was a painter. Dove and Reds started going out on sketching expeditions together, and in the autumn of 1921 they left their spouses for each other. Understandably angry, Florence Dove would not give her husband a divorce, and she refused to let him see their child. It was impossible for Dove or Torr to live out of wedlock in the midst of their old circle in Westport, so they moved onto a houseboat in upper Manhattan. Even the death of Dove's father in 1921 did not ease the couple's plight; he did not leave money to subsidize the messy life he felt Dove was leading. (As Dove reported to Stieglitz, "Brother here the other day as ambassador from Mother to get me to come home to see her, and 'to smooth things over,' but with too coarse sandpaper. Family first, safety first, duty first, and spirit last.") In 1922, Dove bought a 42-foot yawl, the *Mona*, which served as their residence until 1933. Starting in 1924, they docked at Halesite, in Huntington Bay, on the north shore of Long Island.

With Helen Torr in his life, Dove soared out of the creative doldrums he had been in for nearly a decade. Painting and drawing with a vengeance, he regained his momentum and never slackened again. Eager to share his news with Stieglitz, Dove wrote in August of 1921, "It is great to be at it again. I feel more like a person than I have in years." No one could have been more receptive to Dove's newfound happiness than Stieglitz. Never on the side of conventional morality to begin with, in 1918 the married photographer had met a 30-year-old painter who had shown her work during the last days of 291. The woman—one Georgia O'Keeffe—moved to New York in June of 1918 at Stieglitz's invitation; a month later, Stieglitz left his wife and moved in with her, beginning a legendary creative and conjugal partnership.

Helen Torr believed in Dove's talents without question. She accepted his destitute financial predicament and willingly sacrificed physical comfort to his art. Life aboard the *Mona* was cramped, damp and exhausting, with constant chores to do, but Dove's renewal was in full flower by the time he and Reds first docked in Halesite. In 1924 he produced 29 paintings, gleefully telling Stieglitz, "Just to let you know I have corralled five or six more paintings two of which I could guarantee to start a riot in almost any gallery. . . . Have certainly broken through. They are awfully beautiful . . . it is wonderful to be painting." The gallery to which Dove referred was the Anderson Galleries on Park Avenue, where Stieglitz was mounting an exhibition. (Later he took over one of the Anderson's rooms, which would become his next exhibiting enterprise, the Intimate Gallery.) The first show, which opened in March 1925, was called "Seven Americans," and the participants were Stieglitz, Marin, O'Keeffe, Hartley, Charles Demuth, Paul Strand and Dove. "Seven Americans" marked Dove's first major show in 13 years and the commencement of an annual exhibiting schedule with Stieglitz for another 20.

Dove's reinvigoration burst forth in canvases like *Sunrise*, *Penetration* and *Waterfall*, which celebrated the abundance of nature, often with erotic overtones. The artist also had widened his gaze beyond the land and looked heavenward: from about 1923 onward, the sun, moon and stars were omnipresent images. But one day in 1924, Dove told Torr that he was "tired of putting brush strokes on canvas," and for the next six years, Dove essayed collage. Taking found objects and odd materials tinged with associations with the actual subject of the assemblage, he combined them to create witty landscapes, portraits and notations of everyday experiences whose inventiveness seemed to tap into the frugal, self-reliant ethos he absorbed from Newton Weatherly. One of the finest of Dove's collages, *Goin' Fishin'* (1925), bubbles with a Huck Finn mood of fun-loving rebellion. The materials used in it—bamboo sticks, buttons and the sleeve of a denim work shirt—are

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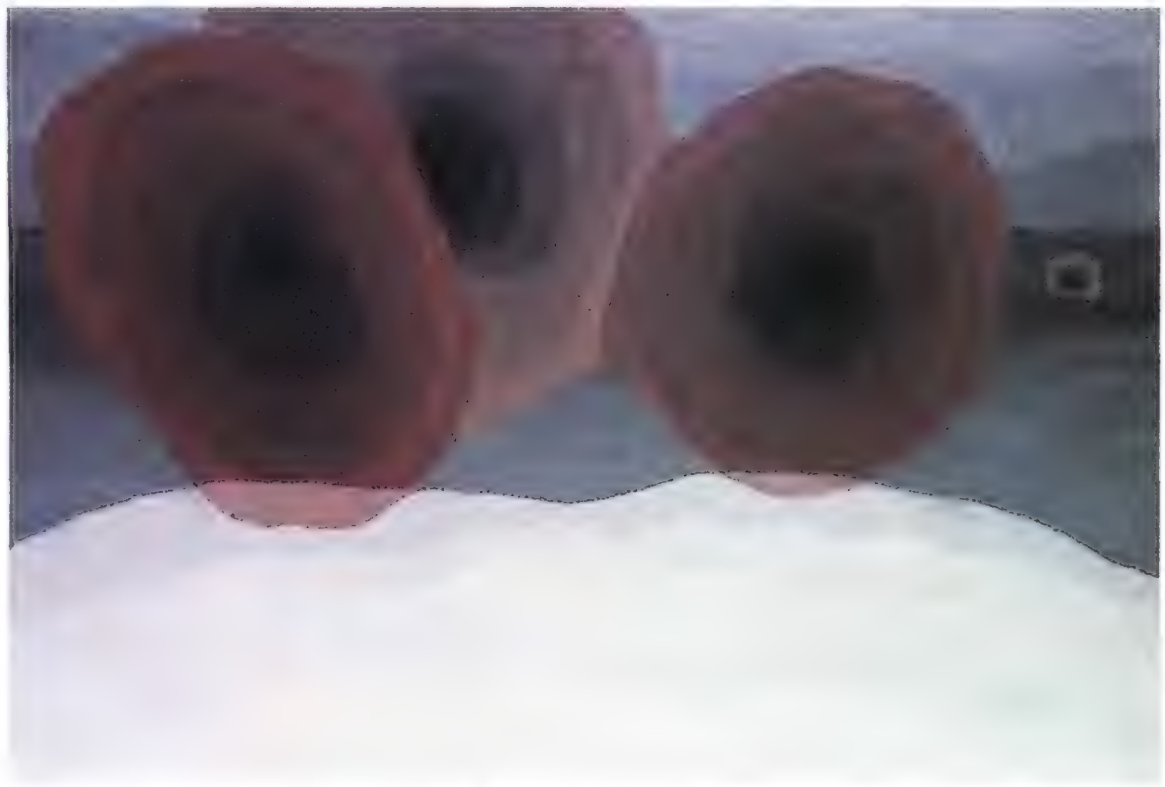
"The fireworks of a truly great American painter . . . fairly take away your breath."

humble and unassuming, yet utterly unorthodox in this context, and the artist exults in their tactile qualities. The portraits are memorable, too. *Ralph Dusenberry* (1924) is a lively homage to a Long Island neighbor who was a diver and swimmer. Dusenberry was an architect, and his profession is symbolized by the carpenter's rule framing the image. Conversely, *The Critic* (1925) mocks the conservative critic Royal Cortissoz, a staunch antimodernist. Much in the spirit of Paul Klee, Dove debunks the pretensions of reigning cultural pieties, giving the critic a top hat, a monocle and an empty head.

But the collages, for all their elegance and humor, were ultimately too narrative for Dove, who felt the pull of abstraction, and in the late 1920s he was concentrating on painting again. No longer experimenting with other media, he was ready to investigate another art form. In line with artists from Whistler to Kandinsky, Dove believed that music was an abstract art that freed its creators from anecdote or literalism, and aboard the *Mona* he listened to jazz on the radio or phonograph. Positing jazz as a quintessential expression of modern life, Dove embarked on visual equivalents of jazz compositions distinguished by the movement of advancing and receding lines. These paintings are more calligraphic than his other work, and the many undulating lines suggest syncopated rhythms. In particular, the spiraling calligraphy of Dove's *George Gershwin—"Rhapsody in Blue," Part I* (1927) is analogous to the rising notes of the clarinet solo that opens Gershwin's symphonic work. Perhaps Dove's most evocative meditation on music was the ineffable *Fog Horns* (1929), with its quivering, overlapping rings that mimic sound waves rippling over the water.



Fog Horns, from 1929: not only the floating quality of the overlapping rings but also the muted, complex colors capture the haunting sound.

By the late 1920s the critics praised Dove's work, but there were few buyers, and Dove and Torr were more pinched than ever. About Dove's 1930 exhibition, in Stieglitz's last gallery, An American Place, the *New Yorker* raved, "The fireworks of a truly great American painter, hung against white walls, fairly take away your breath. Dove has carried his art to a further point than any other American we know. . . . We are sorry that he works in a country enslaved by the shackles of representational painting." Shortly after this review appeared, Dove was again writing to Stieglitz about money woes, "If only I can keep going—for even another month. . . . Can stick it out for another week and then . . . the food stops."

But in 1930, hope materialized in the form of the patron, collector and museum founder Duncan Phillips. Phillips, who had opened his gallery in his Washington, D.C. house to the public in 1921, was busy buying a range of American and European paintings. In 1926, Phillips visited the Intimate Gallery and bought two recent canvases by Dove, *Golden Storm* and *Waterfall*. Four years later, in exchange for having the first pick of Dove's annual exhibitions, Phillips offered $50 a month to the painter. Meager though the stipend was—and even that amount was not without problems, because sometimes Phillips was casual about paying and then pleaded poverty to the cold and hungry artist—the agreement provided stability and was a gesture of faith in Dove. Phillips, who was an eminently decent man as well as a discerning connoisseur, later arranged more generous terms and went on to amass the largest public collection of Dove's work.

Just before Phillips made his offer to Dove, Florence Dove died in October 1929. The artist was reunited with his son and married Reds. Life was still hard—the Doves felt the Depression, although it wasn't as if they had lived well before—but they finally seemed close to attaining a modicum of stability. Then Dove's mother died in January of 1933, and the couple was forced to move back to Geneva, arriving that July.

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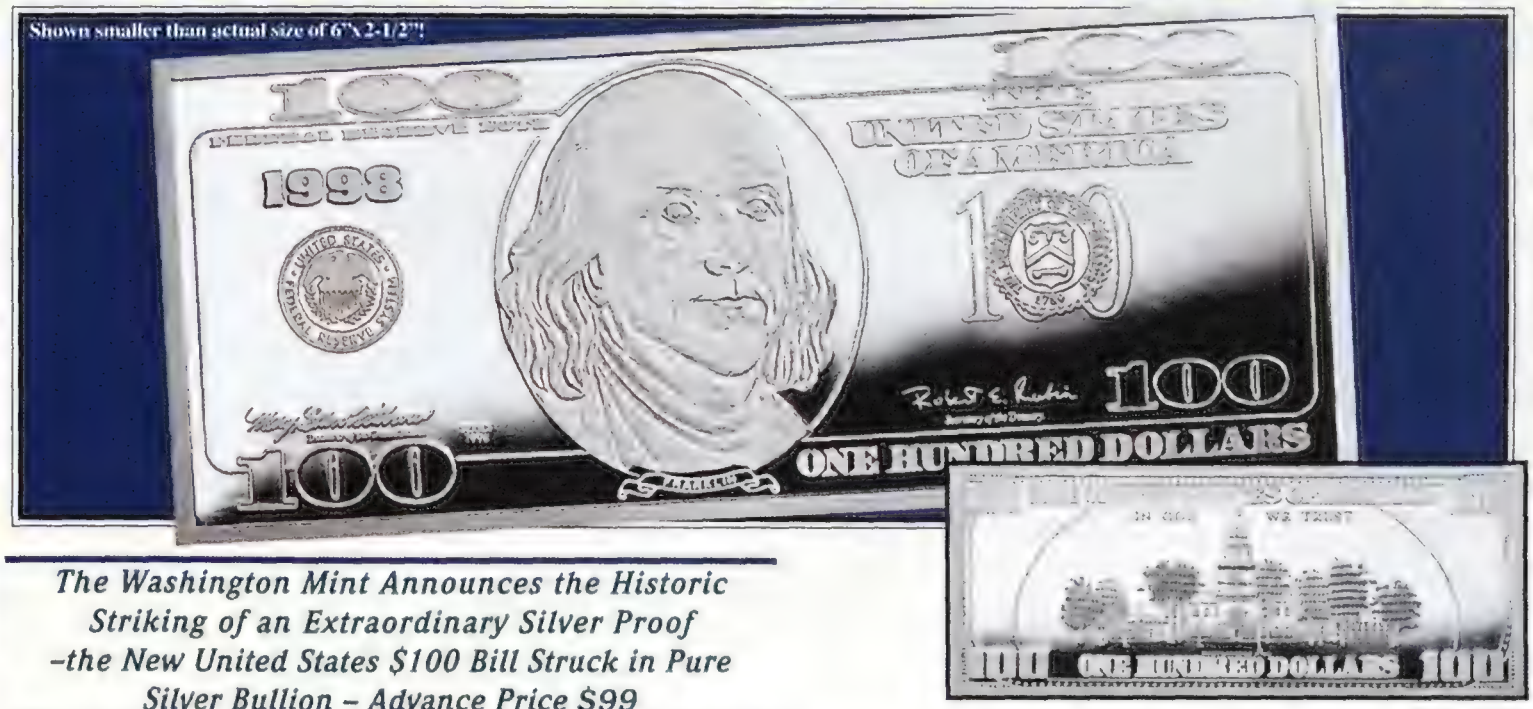

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A summation of both a lifetime of sun paintings and his late style, the highly abstract *That Red One* was painted in 1944, two years before Dove died.

The Dove estate was rich in acreage but cash-poor and highly mortgaged, and Dove had to become a farmer all over again to manage it. If a parcel of land was sold off, the money went toward taxes; the inheritance was a curse. Dove dreaded living in Geneva, yet he worked more fruitfully there at his art. As usual, he responded to his environment, charting the autumn foliage, the animals and crops, and even the industrial development taking place in the area. The Geneva paintings, particularly the glowing "Sunrise" series, represent a remarkable deepening of intensity. Their effect is monumental, and they seem animated by invisible forces. Pulsating lines, heaving surfaces, ragged edges and swollen circular forms floating in empty space push the pictorial field out in all directions. The space is charged with energy, and the canvases possess a hypnotic aura.

In the spring of 1937, Dove was able to sell the family farm, and some of the burden of the estate eased; better still, Duncan Phillips gave Dove a retrospective and, separately from the stipend (which he raised to $100 a month), bought *Goin' Fishin'* for $2,000, a price the artist never dreamed of achieving. Escape from Geneva was in sight. On April 16, 1938, the couple departed for New York City and never looked back.

The Doves gladly went back to Long Island and bought an abandoned post office in Centerport, a shorefront town not far from Halesite. They were landlubbers now, although the building looked out on a tidal pool and Dove could watch the seagulls in flight from his window. But misfortune continued to dog the pair. Dove's health began to break down. He suffered from heart trouble and Bright's disease, a progressive disintegration of the kidneys that quickly left him a semi-invalid.

The vigorous man who was used to chopping wood and mowing hay now found himself confined to a wheelchair. Stieglitz helped out with a check for $1,000, and Phillips raised his stipend to $200 a month, without demanding that Dove produce any paintings in return. Dove could relax about money at long last.

Dove's medical condition impeded but did not keep him from working or, indeed, developing. Important late paintings like *Rain or Snow* (1943) and *That Red One* (1944) have crisp, simplified formats. Most notably, Dove was emphasizing hard-edged geometric forms in his canvases, a departure from his characteristic blurred and amorphous shapes. The references to external reality grew less overt; the artist had enough history behind him to depend on his own means. As he wrote to the critic Elizabeth McCausland in 1943, "So much happens here when nothing is going on outside—just seeking inside."

On July 13, 1946, Stieglitz died of heart failure, and Dove's own death occurred just over four months later, on November 22. Both men left a legacy to American art. For Dove, it was getting at the essence of inner consciousness and external experience—less a matter of abstraction, he said, than "extraction, gravitation toward a certain direction, and minding your own business." Against heavy odds he did all these things, and with a fortitude that can only be called heroic.

Writer Avis Berman is working on a book about James McNeill Whistler and the literary world.

Arthur Dove Retrospective

- Phillips Collection, Washington, D.C. (September 20, 1997-January 4, 1998)
- Whitney Museum of American Art, New York City (January 15-April 12, 1998)
- Addison Gallery of American Art, Andover, Massachusetts (April 25-July 12, 1998)
- Los Angeles County Museum of Art, Los Angeles, California (August 2-October 4, 1998)

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Signs of the Times

BY STEVE KEMPER

AUTOGRAPHS OF LUMINARIES—FROM LINCOLN TO LIBERACE—FEED THE YEN FOR NOSTALGIA AND A BRUSH WITH FAME

A FEW RECENT ITEMS ABOUT autographs: last year at Christie's in New York, a 54-page manuscript written by Albert Einstein, containing a partial proof of relativity, sold for $398,500. In 1994, Christie's auctioned Leonardo da Vinci's 72-page handwritten notebook to Microsoft CEO Bill Gates for $30.8 million. University Archives, one of the country's largest dealers in historical autographs, offers thousands of documents for sale, among them a letter from George Washington about leaving Mount Vernon for the Second Continental Congress ($23,000); a letter about political strategy from Malcolm X to Elijah Muhammad ($15,000); and five of John Hancock's John Hancocks ($2,900 to $12,500).

Things are pricey among the living as well. An autographed pair of Michael Jordan's 1995-96 play-off shoes recently sold for $6,500. In Wisconsin, where Brett Favre's name, face and signature are registered trademarks, a company recently hired the Green Bay Packers quarterback to sign 1,000 pieces of memorabilia. He reportedly was paid $65,000 for just over two hours of penmanship. The retail value of the signed items has been estimated at $100,000.

Potential collectors needn't despair. For less than $300, they can buy the autographs of several inconspicuous 19th-century Presidents, a whole baseball team of living Hall of Famers or a signed photograph of Demi Moore.

Not many years ago, athletes and entertainers felt obliged to provide free autographs to starstruck fans, and collectors of historical signatures occupied a small dusty corner of the antiques market. But now autographs have gone retail. Many living athletes and celebrities demand payment for their signatures. People are shelling out hundreds and sometimes thousands of dollars for things signed by everyone from Mozart to Madonna, from Babe Ruth to Tiger Woods, from Thomas Jefferson to Gerald Ford. The Yellow Pages of any sizable

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city now carry listings under "Autograph Dealers." Autograph/memorabilia stores have sprouted in malls and airports all over the country. Hobbyists and collectors can consult half a dozen magazines and a lengthening shelf of books about current prices, collection strategies and forgeries. "When I started in this business 17 years ago," says Christophe Stickel, a dealer in Pacific Grove, California, "there were 15 full-time dealers and six auction houses that sold autographs. Now I have 600 dealers on my mailing list and there are probably 150 auction houses."

Interest in autographs is surging in part because boomers, now old enough for nostalgia, have developed an expensive taste for memorabilia, and dealers are doing their best to satisfy it. The world of autographs encompasses three broad categories—history, sports and entertainment—and each group defines "autograph" somewhat differently. To a historian, the word means any document that contains a signature—a letter, a check, a manuscript or a contract, for instance. To a sports fan, an autograph is any signed object, from a ball to a box of Wheaties. In the entertainment field, the term is often associated with a signed photograph.

Different values are assigned to different types of autographs. A signed bat is generally worth more than a signed ball, which is worth more than a signed photograph. For historical autographs, the key is content. A mundane letter from Einstein to an obscure correspondent, for instance, is worth less than $2,000, but his letter warning President Franklin Roosevelt about Germany's nuclear program and urging him to begin what became the Manhattan Project sold for $220,000. Among historical collectors, one of the most popular "sets" to assemble consists of the autographs of the signers of the Declaration of Independence. University Archives offers a letter by signer Robert Morris for $900, but it recently sold a Button Gwinnett, who died shortly after signing the Declaration, for $120,000.

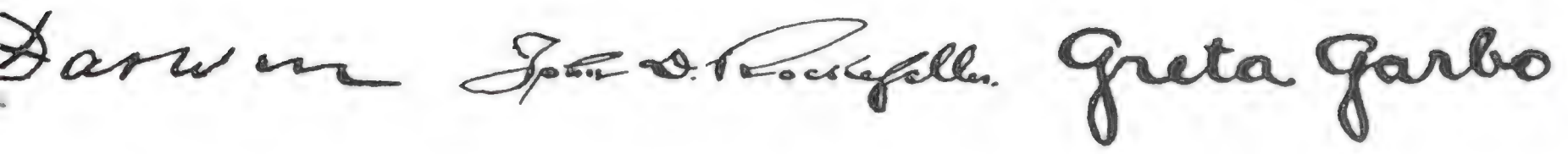
A Paderewski devotee, Christine Smith owns some 1,000 items relating to the composer. The signed photograph and bronze statue atop her Steinway grand are both c. 1920.

People have been saving autographs for centuries. Cicero and Pliny the Elder had collections. Until a couple of hundred years ago, the rarity and expense of writing materials made letters and documents precious, so people kept them. It was a short jump to the hobby of collecting for fun as well as scholarship, especially the correspondence of eminent personages.

History owes a debt to those early hobbyists. Many of the documents that fill our museums and national archives today were preserved over the years by private collectors. War, natural disasters and simple carelessness have destroyed much of the written past. Technology has been another enemy. The printing press, telegraph, telephone, typewriter and, most recently, the computer have made handwritten documents increasingly rare. E-mail just doesn't carry the emotional resonance of a letter written in the human hand.

For most collectors (and even most dealers), that resonance is the prime consideration. But for many, money isn't too far behind. "It's because there's a value on it now," explains baseball Hall of Famer Johnny Bench, after being paid to sign 700 autographs at a sports-memorabilia show in Dallas, Texas, last spring. "It's not what the autograph means anymore, it's what it's worth."

Collector Steven Y. Okano, who spends thousands of dollars a year on toys, books and baseball memorabilia as well as autographs, considers his hobby in part an investment. On a February afternoon, he has come to



the International Antiquarian Book Fair in San Francisco, probably the country's largest exposition of historical books and manuscripts, to nose around and pick up his latest purchases from dealer Christophe Stickel: three letters from John F. Kennedy, written while at Choate ($1,900), at Stanford University ($2,300), and in the Senate ($700). "The next thing is to get a Presidential one," says Okano, "but I'm hesitant because so many were signed by autopen or secretaries."

Autopens are automatic signature machines, and they rank high among the many snares that trip up autograph collectors. Most celebrities and public figures use them, as has every President beginning with Kennedy. Kennedy's autopen signed at least seven different signatures. Ronald Reagan's signed a dozen ways, including "Ronnie" and "Dutch." Because machine-made autographs aren't worth much, dealers and collectors check any contemporary autograph against the person's autopen patterns and real signature, reproduced in reference books. Exact matches reveal the hand of a machine, not a human being, who never signs twice in quite the same way. A collector relies on the dealer to verify that a signature is authentic. The verification, of course, is only as trustworthy as the dealer.

Okano's prize possession is a collection of 164 cigar bands signed by celebrities from earlier in the century, including Louis Armstrong, W. C. Fields, Irving Berlin and Damon Runyon. Okano paid $1,600 for the collection eight years ago and estimates that it's now worth about $25,000.

But profit isn't the main appeal for Okano, an executive-search consultant. Like most collectors, he likes to delve into the life behind the autograph and can talk knowledgeably about the figures represented in his collection, from Helen Keller and Lou Gehrig to Sir Isaac Newton and Harvey Firestone. "There are stories in each piece," he says.

Christine Smith had no interest in autographs until the day she heard Paderewski's *Piano Concerto in A Minor* on her kitchen radio. The composer took over her life. She started with signed photographs and concert programs, and even studied French for four years because that's the language he used in most of his letters. Nine years later, she owns about 1,000 pieces of Paderewskiana, as well as half of a ranch he once owned in Paso Robles, California. Currently she is helping set up a Paderewski museum there, which will house her collection along with other donations. "There are so many people and things in history that get lost," Smith says. "I enjoy knowing that when I'm dead there will be this collection, and people will say, 'So *this* is who Paderewski was, and it was collected by this person.' It's a little bit of immortality."

California investor David Karpeles' claim on immortality is a bit larger. Since the autograph virus infected him in 1978, he has bought enough material to open seven major manuscript museums and 102 mini-museums in schools and libraries across both the United States and Canada. Among the treasures he owns are the original draft proposal of the U.S. Bill of Rights; Karl Marx's research notes for *Das Kapital*; and important scientific manuscripts by Galileo, Newton, Darwin, Einstein and Freud.

It is one of the largest private collections in the world and recalls the fervor of earlier collectors such as John Pierpont Morgan and Henry Huntington, whose vast collections formed the basis for the great libraries that bear their names. (Another

Ardent collector David Karpeles—pictured here in his Manuscript Library Museum in Santa Barbara, California—rotates exhibitions through his 109 museums.

immense collection of manuscripts, said to be worth nearly $100 million, has been amassed by businessmen Richard Gilder and Lewis E. Lehrman, and is on indefinite loan to the Morgan Library in New York City.)

For Karpeles, it began the day he and his wife, Marsha, took their two children to the Huntington Library in San Marino, California. The children wandered into the manuscript area and were intrigued by the sight of documents written by George Washington and Thomas Jefferson. The Founding Fathers suddenly became human beings to them—real people who crossed out words and wrote conversational letters to friends. Karpeles himself was galvanized by the idea of making history human and immediate to all children through handwritten documents. He does his own research and buying, and genially calls it "a sickness, an obsession."

Today, his obsession has enticed him and Marsha to the International Antiquarian Book Fair from their home in Santa Barbara. John Reznikoff, president of University Archives, tells him, "I'm tracking down something you might like—the original patent by Sam Colt for the revolving [gun] chamber, signed three times."

"I'll take that," says Karpeles quickly. "Save it for me." Then he disappears into the crowd of collectors, lured on by the next find.

Reznikoff smiles. He understands. He began collecting as a boy, then turned his hobby into his profession. "I am the Indiana Jones of paper," he says. "I go out and look for treasure." He travels, contacts potential sources of documents and targets newspaper ads in certain areas. He may run an ad in Utah asking for Mormon letters, or in Moscow asking for letters by Dmitry Shostakovich.

When someone offers Reznikoff an item, several of the 17 employees at his offices in Stamford, Connecticut, attempt to authenticate it. They check an extensive file of facsimiles of genuine signatures, and also look for anomalies in the time line or the context. A letter from Lincoln dated in 1866, for instance, would be fake.

There's a long, fascinating history of bogus signatures and documents, some of it told in Kenneth W. Rendell's *Forging History*. The most amusing forger may be Denis Vrain-Lucas, con man extraordinaire. In the 1860s the prolific Frenchman sold 27,000 letters, manuscripts and documents to Michael Chasles, a prominent mathematician whose head for numbers did not extend to dates. Vrain-Lucas's forgeries—all of them written in modern French—were signed by such notables as Cleopatra, Alexander the Great, Judas Iscariot and Attila the Hun. Bad forgeries, in fact, remain the rule. In 1983, when the discovery of the "lost" Hitler diaries made the news, two autograph experts working separately—Rendell and Charles Hamilton—quickly revealed that they were ludicrous frauds.

To detect more skillful forgers, however, requires familiarity with the history of paper, ink and watermarks, as well as the idiosyncrasies of the particular writer—preferences in nibs, paper color, and the writing itself. When in doubt, experienced dealers

Steven Okano shows off a page from his prize possession—a collection of autographed cigar bands. Baseball great Ty Cobb signed this one, mounted with a card.

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TY COBB

Walt Disney Babe Ruth S B.

check documents with microscopes, ultraviolet light and micrometers.

Forgers aren't the only scoundrels attempting to meet the increased demand for autographs. Thieves frequent the historical collections of libraries and research institutions, where they slice out signatures or steal entire books and manuscripts. In defense, many facilities have installed sophisticated security systems.

The autograph boom has changed things for museums and libraries in other ways as well. During the past couple of decades, as institutional budgets have been falling, enthusiasm for autographs has been rising among private collectors, and so have prices. Important items and collections that previously might have been donated to institutions are now likely to be sold piecemeal to private collectors. "It's unfortunate for two reasons when historical documents are lost as part of our cultural heritage," says John Fleckner, the chief archivist at the Smithsonian Institution's National Museum of American History. "By taking an individual document out of a family record or a business's records, the surrounding information is left with a hole in it. And on the other side, that one piece also becomes much less valuable as a historical record, because there's no surrounding information."

Many collectors concentrate on specific areas. Reznikoff, for instance, knows which of his 4,000 clients want Confederate generals, Vice Presidents, Secretaries of the Navy or famous scientists. Although he peddles "classic" villains such as Al Capone and John Wilkes Booth—figures who have had an impact on the course of history—he avoids recent ones such as Charles Manson and others whom he views as "distasteful." Nor does he deal in contemporary sports figures or entertainers, a side of the autograph business that he considers "seedy."

Bill Miller disagrees. He's an autograph dealer in Corona, California, and the publisher of *Autograph Collector* magazine, which has grown in five years from 900 subscribers to more than 30,000. "Some people have this Eastern bluenose attitude, 'I'm too refined for popular culture,'" he says. "We feel that's nonsense. We try to serve all our collectors, whether they're interested in Cindy Crawford or Abraham Lincoln."

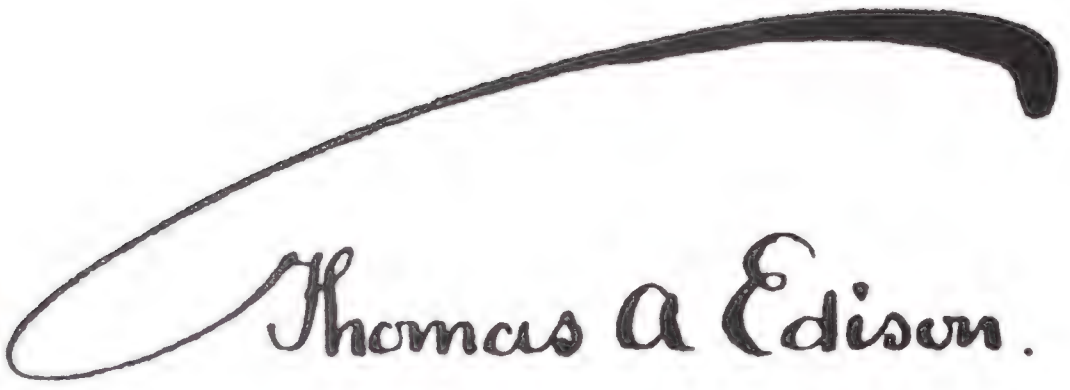
Pen and glossies at hand, Yvonne Woolf plies her trade getting autographs.

Miller notes that the wave of new autograph collectors consists mostly of middle-aged men. "People want to buy what they can relate to," he says, "and not many people feel a connection to Millard Fillmore. They *are* interested in Washington, Jefferson and Kennedy. But Herbert Hoover, Grover Cleveland—who cares?"

On the other hand, Miller acknowledges that buying the autographs of contemporary celebrities as an investment is equivalent to buying junk bonds. At the beginning of the decade, an autographed 8-by-10 photograph of teen bubble-gum singer Debbie Gibson sold for $100. "Now you're lucky to get $20."

A number of celebrities still send their fans free autographs through the mail, but there's always the possibility that such signatures might be bogus, signed by a secretary or an assistant or an autopen. So some collectors and dealers specialize in getting autographs in person. That's Yvonne Woolf's job. She runs a mail-order autograph business called I.P.A. Network in Riverside, California, about an hour from Hollywood.

The trunk of Woolf's car is stuffed with more than 5,000 unsigned glossy photographs, filed alphabetically and by gender. "So if I see Jaclyn Smith somewhere," she says, "I can go to 'Women-S,' and there she is." If necessary, Woolf tails her targets. "I've gotten a lot of flack about that," she says. "People say I'm a stalker. I say, 'I'm sorry, but sometimes you have to go to all lengths to get the autograph.'" Woolf and her small net-



work—a couple of other dealers, plus reporters and photographers for the tabloid media—get their information from doormen, managers and other sources. They go to premieres, parties and movie sets, or just hang around hotel lobbies or the L.A. airport. Woolf does a lot of stakeouts. The longest was a nine-hour wait for Harrison Ford, whose signed photograph sells for $195.

She tries to go out several times a week and may net as many as 20 or 30 autographs. "I make a good living," she says. She does find the tactics of some collectors offensive—claiming to be dying of cancer, for instance, or dragging small children out late at night to soften up reluctant celebrities. But she's proud of her stock because she knows it's genuine.

That assurance is partly why Steve Pemper, owner of Ball Four Cards in Milwaukee, paid so handsomely to have the Green Bay Packers' Brett Favre sign items. Pemper also negotiated a price with about 40 of Favre's 1996 teammates to autograph team helmets. In mid-January, the helmets sold for $1,299 apiece. Two weeks later, after the Packers won the Super Bowl, the price jumped to $1,996.

Pemper has been in the business for 18 years, and remembers when the onetime Milwaukee Braves stars Hank Aaron and Warren Spahn caused a furor, in 1980, by charging $5 for autographs. "It's understood now that it's a business," he says. "But it's too bad the fan has been victimized. A kid 5 or 10 years old shouldn't have to pay for an autograph, but he does. And the reason is that some dealers hire kids, give them 12 items, and say, 'I'll give you $5 for every item you get signed.' All these players have caught wind of that, and now they don't know if they're signing for a kid or for the dealer standing behind him."

But the players are greedy, too, Pemper adds. "Nobody turns the dealers down. Some of these old stars have told me they're making more from me than they made as players. A guy like Aaron can command $40,000 to $50,000 per show."

Aaron sometimes does signings for Jeffrey Rosenberg, president of Tri-Star Productions, Inc., which puts on about a dozen sports-memorabilia shows across the country every year. In August, Tri-Star ran this year's National Sports Collectors Convention in Cleveland. It drew 950 dealer exhibits, 40,000 shoppers, and between 60 and 70 players who got paid to sign autographs. Just as historical collectors might want all the signers of the Declaration of Independence, sports collectors might want all the football Hall of Famers, or all the players who've hit 500 home runs. Promoters such as Rosenberg pay stars a fee, charge the public per autograph and watch the lines form.

A decade ago, 90 percent of the dealers at these sports shows were selling cards. Now half of them are selling autographs and other memorabilia. But forgeries and fakes can be a problem. "If you're in the business," says Don Flanagan, a consultant who handles sports-related evaluations and auctions for Christie's, "there are some names you'll automatically look at closer. I'm going to a show this weekend, and I know there will be 100 items there by Michael Jordan and 85 of them will be fake."

At Tri-Star's autograph table in Dallas, Hall of Famer Johnny Bench is signing all manner of memorabilia: mostly balls, bats, books, photographs and hats, but also mitts, jerseys, home plates and plastic Johnny Bench action figures. In the past he has signed socks, sneakers and a car.

Most of the customers fit into the demographic described by Bill Miller—middle-aged males. Many of them wear boyish expressions of shy happiness. Each person is paying $25 per autograph for regular items and $75 for "premium" items such as bats. Some people, almost certainly dealers, hand Bench eight or ten objects. Tri-Star has contracted with Bench to sign 700 autographs, and his agent sits next to him with a clicker. "Every autograph is a unit item," says a Tri-Star employee.

The money issue tends to obscure the real reason that many collectors want autographs—to connect with someone famous and catch a whiff of celebrity or immortality, or maybe even to imagine themselves being the hero they idolize. In Dallas, a man in his 40s hands Johnny Bench a Louisville Slugger. Bench signs it up near where his signature has been burned into the wood. The fan walks away smiling, looking down at the autograph as he grips the bat with both hands, waggling it a little, as if he's striding up to home plate.

Frequent contributor Steve Kemper owns an extensive collection of his own autographs on his canceled checks.

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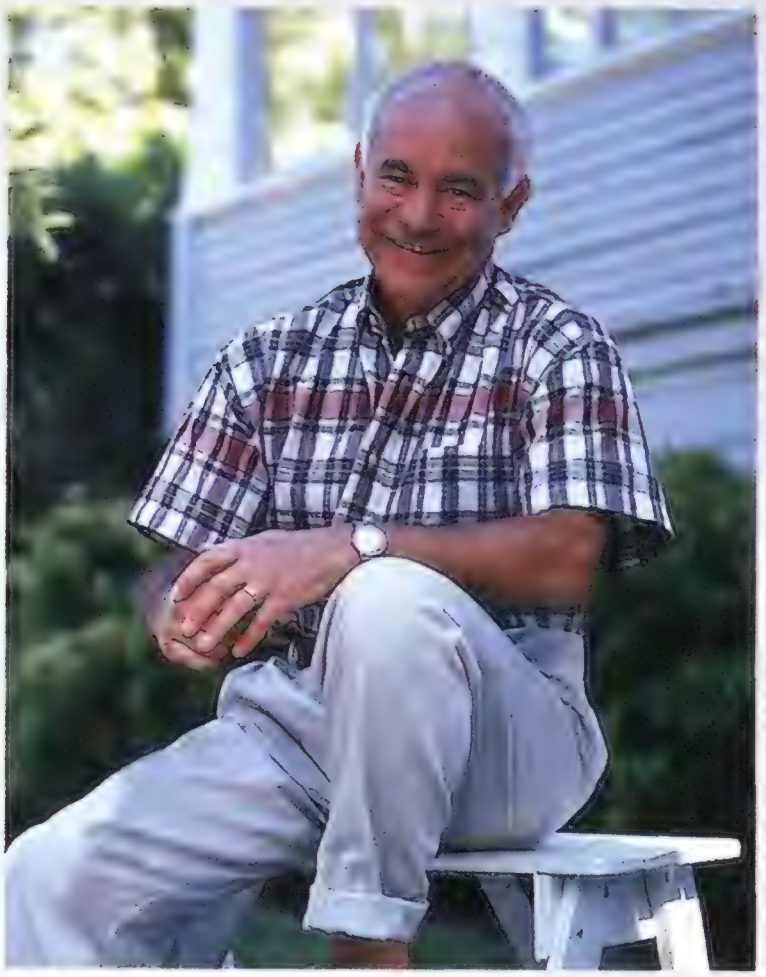

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July 15, 1986:
Chrysler Corporation designers sketch an idea that moves the passenger cab forward on the chassis and the wheels to the corners, creating a larger space for people. It contradicts eight decades of automotive design.

January 8, 1997:
Auto Show crowds get the first glance at the next generation of cab-forward thinking in the all-new 1998 Dodge Intrepid and Chrysler Concorde. Competitors' shoulders sag.

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March 23, 1994:
Ducks mistaking Chrysler test track for local pond unwittingly inspire agile handling of Chrysler Cirrus and Dodge Stratus sedans.

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September 9, 1987:
Their creation, dubbed Portofino, debuts at the Frankfurt Auto Show. Acclaim leads a Chrysler Corporation exec to ask: "Why can't we build a production car like this?"

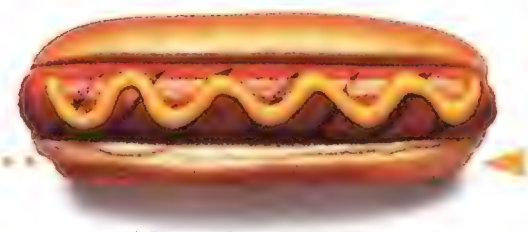
January 7, 1989:
Chrysler's design and engineering teams agree their new midsize car should reflect the thinking in Portofino—scrapping current plans.

September 8, 1991:
International Motor Press Association gets preview of new "cab-forward" sedans at Moran's Restaurant in New York. Journalists are, briefly, too excited to eat.

April 2, 1993:
Quote from the Los Angeles Times: "Thanks to that cab-forward design, rear seating in [the Chrysler LHS] offers the same knee and leg room as first class on Air France."

September 15, 1992:
Chrysler Concorde, Dodge Intrepid, and Eagle Vision sedans are launched. Their cab-forward profile "makes everything else look old," according to one writer.

March 12, 1993:
Two Chrysler designers, working on new compact sedan late on Friday, decide to go for Chinese food. Nine hours later they arrive in Chinatown—in New York.



November 6, 1992:
To get mall shoppers to stop and test their seating prototype, a group of Neon engineers offers free hot dogs.

we're about to launch the next wave of vehicles that will be even more striking, more comfortable, and more fun to drive. Call us revolutionaries, but we think that's what great cars are supposed to be about.

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A golden "tin man" suit became C-3PO, the complaining, prissy protocol droid who, along with sidekick R2-D2, aids in the triumph of the Rebel Alliance over the likes of an Imperial Royal Guard (far right) and a Gamorrean gatekeeper (right).

STAR WARS ON THE MALL

PHOTOGRAPHS BY ERIC LONG AND MARK AVINO

"A LONG TIME AGO, IN A GALAXY FAR, FAR AWAY . . ." SO BEGINS THE EPIC *Star Wars* saga—the timeless tale of the struggle between light and dark, good and evil. George Lucas' film trilogy and the world he created have become part of the collective consciousness of our times. Videos, books, toys, calendars, comics and other spin-offs continue to perpetuate the saga, which has assumed mythic proportions since it was first launched 20 years ago. The key to the trilogy's enduring magic, according to a new exhibition at the National Air and Space Museum, was its success in fashioning a modern-day myth—a story that inspires and instructs, that reflects contemporary concerns, yet embodies a universal and timeless wisdom. "Star Wars: The Magic of Myth," on view from October 31, 1997, through November 1, 1998, showcases 200 original props, models, costumes, characters and artworks used in making the films. The artifacts are on loan from the archives of Lucasfilm Ltd., whose *Star Wars* universe captured the imaginations of millions of viewers by juxtaposing elements of classic myth—princes and ogres, enchantment and chivalry—with a galaxy of androids and starships to create a space-age "hero's journey." The show, which was made possible by Bantam Books, examines these mythological roots and celebrates the trilogy as a cultural artifact. Admission is free, but timed tickets are required (see page 44). A companion book by exhibition curator Mary Henderson, with images by Smithsonian photographers Eric Long and Mark Avino, is also due out from Bantam. "Underneath the flash and dazzle of special effects," writes Henderson, "is the magic of myth, a shape-shifting realm where heroes, monsters, wizards and magic talismans dwell in labyrinths of discovery. It is a story that will endure into the next millennium." —*Diane M. Bolz*

An engaging cast of vicious villains, valiant heroines and affable aliens takes center stage at NASM

Clockwise from top left: Princess Leia's white gown, Darth Vader's black visage; nefarious desert bandit, a Tusken Raider, and his gaderffi stick; green-skinned Jedi Master, Yoda; hirsute Wookiee, Chewbacca; Jabba the Hut henchmen, Weequay, left, and Wooof.

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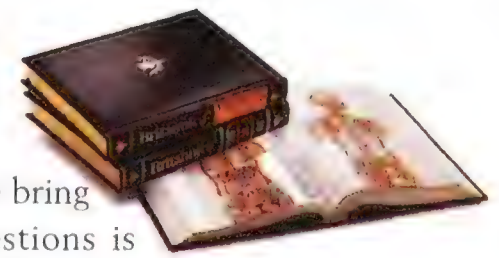

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MIRIAM LESLIE

Belle of the Boardroom

BY DONALD DALE JACKSON

Overseeing a publishing empire that pioneered illustrated coverage, she became a legendary CEO

FIRST AND ALWAYS SHE WAS A great beauty, the "belle of the ball" at Abraham Lincoln's first inaugural and a diamond-bedecked dazzler well into her 60s. But Miriam Leslie was much more than a pretty face amid swirling copper-colored hair. She was a writer who produced one very good travel book and truckloads of essays on life and love; a reporter with the moxie to debate polygamy with Brigham Young on his home turf; an editor with enough talent and drive to rescue a failing publishing empire and turn it around—twice; an accomplished linguist and translator; an early feminist who championed women's rights and bequeathed the bulk of her $2 million estate to the cause; and, finally, but by no means incidentally, a much-married, oft-entangled, ever-beguiling and flirtatious convention-flouter and social rule breaker, a woman whom small minds might call a home wrecker. Reaching for a late 20th-century parallel to this phenomenon of the late 19th is a formidable stretch, but think of a combination of Ann Landers, Gloria Steinem, Katharine Graham and Elizabeth Taylor, with Clare Boothe Luce and Pamela Harriman thrown in for good measure.

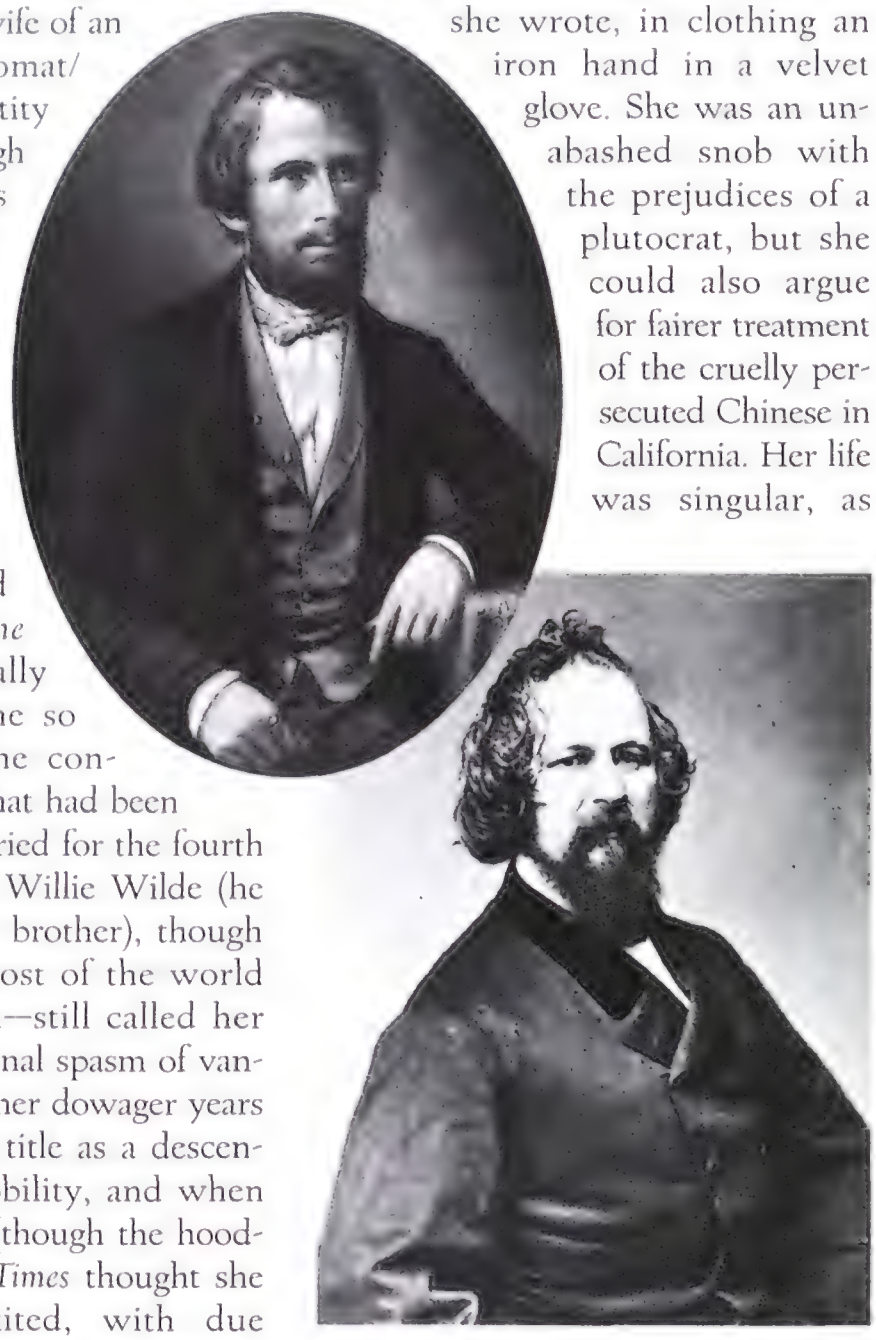
Renowned for her beauty, Miriam Leslie proved to be formidably brainy as well. After the death of her publishing-magnate husband, she headed up his firm, rescuing the foundering enterprise from financial ruin.

The succession of names she bore is an outline of her vivid career. She began as Miriam Florence Follin of New Orleans, did a brief, cloudy and later sup-

pressed stint as Mrs. David Peacock of New York, then took a turn on stage as Minnie Montez, sister of the world-renowned actress Lola, before the Civil War. She emerged next as Miriam Squier, wife of an archaeologist/diplomat/journalist, an identity that persisted through considerable stress and storm until it metamorphosed into Mrs. Frank Leslie, spouse of a publishing tycoon and a journalistic powerhouse in her own right.

After Leslie died she actually *became* Frank Leslie, legally changing her name so she could hold the contracts (and debts) that had been his. When she married for the fourth time she was Mrs. Willie Wilde (he was Oscar Wilde's brother), though the world—and most of the world knew her by then—still called her Frank Leslie. In a final spasm of vanity she declared in her dowager years that she merited a title as a descendant of French nobility, and when she died at age 78 (though the hoodwinked *New York Times* thought she was 63), she exited, with due grandeur, as the Baroness de Bazus.

Miriam Leslie (to settle on one name for convenience) was in the end more and less than she seemed. She had the good editor's gift for staying ahead, but not too far ahead, of her audience, but as a writer she lapsed too often into mauve-tinted self-indulgence. She was a remarkably successful businesswoman, perhaps her most notable achievement, in an age when executives in silk dresses were rarely taken seriously. The feminism she professed seems quaint by today's sterner standards—women should be credited for their brainpower, she argued, but also cherished, on occasion, as charmingly helpless. With Miriam there was often an impulse to have it both ways; she believed, she wrote, in clothing an iron hand in a velvet glove. She was an unabashed snob with the prejudices of a plutocrat, but she could also argue for fairer treatment of the cruelly persecuted Chinese in California. Her life was singular, as different from that of most American women of her time as that of a queen, and her life was her legacy.



Miriam cheerfully threw over husband E. G. Squier (top) to marry Frank Leslie (bottom), the dynamic publishing mogul.

Her early years were both an apprenticeship in refinement and a series of narrowly averted wrong turns. She was born in New Orleans' French Quarter in 1836 to parents who, it seems, never bothered to marry, though they remained more or less together. Her father, descended from French Huguenot nobility, raised her to appreciate literature and culture, tutoring her not just in French but in Italian, Spanish, German and Latin as well. The family moved to Cincinnati and then, when she was 11, to New York. When she was 17, Miriam, already a knockout, made her first detour from the straight and narrow. The man's name was David Peacock, and it was doubtless no coincidence, given what would become her lifelong obsession with diamonds, that he worked as a jewelry clerk. The untidy details, surfacing two decades later in the most awkward possible way, showed that Miriam's mother found out about her affair with Peacock and threatened him with jail unless he married her. The outflanked clerk obliged on the understanding that he wouldn't have to support her, nor would they live together, and two years later the marital charade was annulled.

Single again and not quite 20, Miriam turned up next on the stage, billed as Minnie, the younger sister and partner of Lola Montez, one of the most famous and flamboyant stars of the 1850s and the onetime mistress of King Ludwig of Bavaria. The two teamed up in a series of perishable comedies with titles like *The Cabin Boy* and *Plot and Passion*, performing in various Eastern cities and receiving polite notices but no thunderous mandate to carry on. Miriam soon retired from the boards after keeping company, temporarily, with a wealthy (and married) former congressman from Tennessee.

She was beginning to move in the loftier social strata her father had envisioned for her. Charming, radiant and intelligent, she captivated the accomplished archaeologist and Central America expert Ephraim G. Squier at their first meeting. Miriam and the multitalented Squier—he was

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by Erin Kahn

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During the Leslies' tour of the West, Miriam met with Mormon leader Brigham Young; predictably, her views on women did not accord with his polygamist stance.

a diplomat, businessman, writer and scholar, and 15 years her senior—were married in October 1857. For a while they made a handsome and happy couple. They traveled to Europe, she helped him with a Spanish-language newspaper he published in New York, and his background in diplomacy earned them an invitation to Lincoln's first inaugural in March 1861, where the 24-year-old Miriam had her first whirl in the society spotlight.

"This lady's personal attractions, youth and graceful manner, made her the acknowledged belle of the ball," a newspaper account said, "while her sprightly and intellectual conversation, and her knowledge of various languages, placed all who came within her sphere perfectly at their ease." Her dress alone—a vision in cherry satin, flounces and puffed sleeves—rated several sentences.

This description appeared in *Frank Leslie's Illustrated Newspaper*, which was significant because publisher Leslie, the reigning king of pictorial journalism in America, would in short order emerge as, first, Squier and Miriam's tenant in their Manhattan house, next as their employer and then—but that would be getting ahead of the story.

Leslie was a dynamo, an earthy, generous and talented engraver-entrepreneur who had emigrated from England and launched a series of illustrated journals that adhered to his motto, "Never shoot over the heads of the people." His weeklies and monthlies aimed instead at all members of the family, combining high-quality illustrations with a zest for the sensational and a folksy, down-home flavor. Miriam would before long leave her own stamp on the Leslie product, but first the domestic drama had to play out.

Leslie hired Squier as a writer and editor for his *Illustrated Newspaper* in late 1861. The publisher, Squier had learned, was unhappily married and seeking separate lodging, so that same year Squier had invited him to board with him and Miriam, an offer he may have rued for the rest of his life. Miriam charmed Leslie from the beginning, and she soon became an editor of *Frank Leslie's Lady's Magazine*. The Squiers and Leslie presented a contented threesome at first, but before long Frank and Miriam were clearly showing interest in each other.

In 1867 the trio visited Europe, but Squier didn't enjoy the trip quite as much as the other two. Leslie arranged to have him jailed for a debt he owed in Britain, freeing the publisher and his fellow litterateur to enjoy two weeks in London together before they bailed him out. Back home in New York, rumors had scudded for years around Leslie headquarters about the sleeping arrangements in the Squier home, and which doors were open and which closed. Leslie's wife fought his efforts to get a divorce for several years before she finally acquiesced in 1872.

Getting rid of Squier, who by this time was drinking heavily, was more

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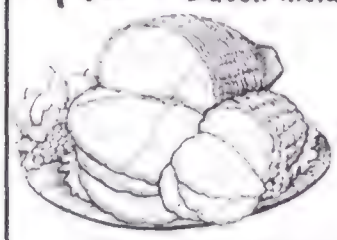

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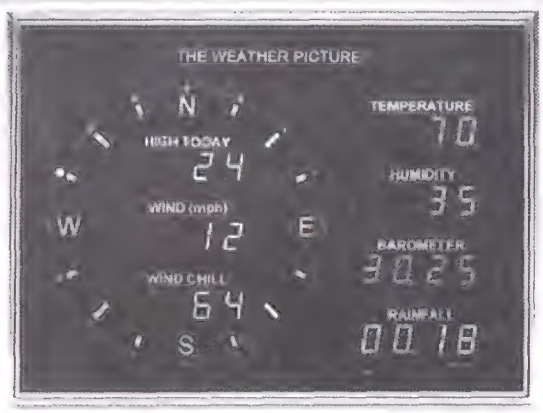

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complicated. Miriam arranged for him to attend a party where he drunkenly cavorted with a prostitute while friends of Leslie's watched as potential witnesses in a divorce action. Squier didn't contest the divorce, and Leslie and Miriam married in 1874. Less than a month after their wedding, Squier was adjudged insane in a New York court and confined to the Sanford Hall Asylum in Flushing.

Miriam had by this time evolved into a capable and productive journalist. She was editing three of the Leslie papers, the *Lady's Magazine*, *Frank Leslie's Lady's Journal* and a family weekly called *Frank Leslie's Chimney Corner*, which she had planned and launched and which soon was earning $72,000 a year on a circulation of 80,000. *Chimney Corner* billed itself as "high-toned and pure, combining entertainment with instructive features." A normal issue contained fiction, a story about an exotic place or custom, a sketch of a "self-made man of our times," an item on a natural wonder, poetry, a joke page and an essay by the editor. She held forth on topics ranging from "Broken Hearts" to "Social Tyrants" and "Ennui" to "Useless Men," dispensing commonsense advice and observations in a somewhat arch but often engaging style. An essay on middle age asked forgiveness for any number of encroaching infirmities—including an "inability to waltz with distinction" and a "tendency" for the hair "to thin." Another, on children (which Miriam lacked), expressed surprise that anyone could cherish a "scratching, kicking, struggling little creature that chiefly occupies its waking hours in making the most extraordinary grimaces and smiling feebly at those who temporarily become imbecile for its amusement."

Years before Miriam met Frank Leslie, she appeared in one of his publications: in 1857, she and actress Lola Montez were shown crossing an icy Hudson on their way to perform.

The mid-1870s were golden years for the Leslies. The pretense and circumspection were over. They lived in a house on Fifth Avenue once owned by the notorious Boss Tweed and had a 12-room lakeside cottage at Saratoga where they idled away vacations amid the stables, the esplanade, the sunken croquet lawn, the steam launch at their private dock. There were guests such as Gen. Ulysses S. Grant and Emperor Dom Pedro of Brazil, elegant soirees and nights at the opera. Ever partial to diamonds,

Miriam donned $70,000 worth of diamond jewelry for an 1875 reception in honor of Samuel Tilden, the governor of New York. "Money is the all in all of our existence," she had once advised the unfortunate Squier, and she knew how to enjoy the all in all.

The Leslies' appetite for extravagance culminated in a luxurious and carefully planned coast-to-coast railroad trip in 1877, a grand tour that yielded an enlightening close-up confrontation between the most refined of Eastern sophisticates and the still untamed and unruly West, where Custer's cavalrymen had made their stand at Little Bighorn only a year earlier. The trip was a brilliant stroke: the railroads picked up the tab for their opulent palace car, with its oversize roaster oven and plush furnishings, in exchange for the publicity; artists and writers traveling with them (the party totaled 12, plus Miriam's Skye terrier, Follette) sent dispatches back to the Leslie periodicals, while Miriam took notes for a book that would prove to be her most impressive literary legacy.

The Leslies and the West got their first look at each other when the train rattled onto the Great Plains after stops at Niagara Falls and Chicago. Outside Omaha, Miriam peered out at a lonely band of Indians riding into a storm on the "apparently illimitable" tawny-colored plain. Few if any other tourists could have compared the appeal of buffalo grass for grazing animals to the way "a gourmand accepts fresh truffles." In Cheyenne they visited a theater and noted a sign above the bar reading "Gents, be liberal." In Colorado Springs they learned how to circumvent local prohibition laws: the thirsty party, Miriam wrote, "approaches [a] window, beside which there is a slit in the wall, and, passing through this latter ten or twenty-five cents . . . sighs audibly: 'How I wish I had a glass of ale,' and presto! the window shelf is turned by some mysterious hand, and presently on it rests a mug of foaming ale. . . ."

They lingered longest in San Francisco, savoring the comforts of the Palace Hotel, touring Chinatown and looking in on an opium den in the company of a detective, and hobnobbing with millionaires Leland Stanford and William Sharon. Miriam, alluding to the free and easy style that has always characterized San Francisco, observed that "the climate, like the society, like the morals, and like the social habits . . . is a little mixed." She was both fascinated and repelled by the Chinese. She was distressed to see an Asian girl who had been sold into

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slavery, but she marveled at a Chinese drama when a dozen men "turned somersaults across the stage . . . each one flinging himself fully six feet in [the] air and spinning round like a wheel. . . ." Miriam deplored the pervasive persecution of the Chinese, praising their work habits and defending their right to "that freedom and manly self-government we are so justly proud of."

A side trip by stage to Yosemite gave the Leslie party and four friends an unscheduled glimpse of how most Westerners really lived. A storm forced the 16 of them to spend the night in a three-room stage station already occupied by two women and three children. Miriam appointed herself cook, improvising a meal from the minimal victuals on hand before bedding down on a table with a bag of salt for a pillow. As her biographer Madeleine Stern put it, Miriam brought "not only her fashion but her fortitude to the West."

Eastbound again, they paused in the bonanza town of Virginia City, Nevada. While Frank was fascinated by the underground silver mines and mills, Miriam was contemptuous of Virginia City, dismissing it in a few haughty lines that would come back to hurt her in a way she never could have imagined. "To call a place dreary, desolate, homeless, uncomfortable, and wicked is a good deal," she wrote, "but to call it God-forsaken is a good deal more, and . . . we never found a place better deserving the title." She complained that every other house was a casino or saloon, adding a gratuitous slam at the women in the town where Mark Twain once worked as a newspaperman: "The population is largely masculine, very few women, except of the worst class."

The journalistic highlight of the trip was the Mormon capital, Salt Lake City. Miriam, married to her third husband (even if the third didn't know about the first), was no admirer of a religion whose leader had between 19 and 27 wives, but she marshaled charm enough to get a revealing interview with 76-year-old Brigham Young. They began with pleasantries about the weather, but Miriam was having none of that. "Do you suppose, Mr. President, that I came all the way to Salt Lake City to hear that it was a fine day?" she said. The courtly Young replied that he was sure she didn't, "for it must be fine weather wherever you are."

Miriam Leslie scooped her competitors in coverage of an assassin's attack on President Garfield in 1881; circulation soared.

Maintaining the offensive, she wondered, "What religion can make a woman happy in seeing the husband whom she loves devoted to another wife . . . ? Any woman, I should think, would spend all her strength . . . to attract and retain his love." Young, cocking an eyebrow and allowing that she looked "like just the woman to do that sort of thing," replied that Mormon women were

content and accepted church teachings. Miriam then asked whether Mormon husbands felt no preferences among their wives. "Well, perhaps," the patriarch replied. "Human nature is frail, but our religion teaches us to control and conceal those preferences . . . and we do—we do."

Miriam's book about the trip, *California: A Pleasure Trip from Gotham to the Golden Gate*, was out before the end of the year. In a coy preface she tried to derail criticism by calling the book the "vapory visions of a woman's memory" and "not so much a book as a long gossipy letter to one's friends," but she needed no extra help. The book succeeded as a lively, perceptive narrative by a sensitive if insulated traveler. The *New York Herald* found it a "pleasantly written" history, while the *Sun* lauded her "happy faculty of description."

The trip and the travel book were in retrospect the zenith of the good times for the Leslies as a couple; after that the pendulum swung the other way. The first blast of bad news was Frank's financial collapse. He had been spending more than he earned for some time, and the economic crisis of 1877 sent him deeper into debt, as did overexpansion of his press empire and the Leslies' lavish lifestyle. A news item in late 1877 listed debts of $324,825. His property was assigned to another publisher, with Frank, as general manager, to receive only 20 percent of his publications' profits.

The most devastating blow fell in July 1878. A Virginia City newspaper, the *Territorial Enterprise*, and a simultaneously issued 24-page pamphlet unleashed a vicious—but overwhelmingly accurate—attack on Miriam Leslie. "OUR FEMALE SLANDERER," the headline blared. "MRS. FRANK LESLIE'S BOOK SCANDALIZING THE FAMILIES OF VIRGINIA CITY. THE HISTORY OF THE AUTHORESS—A LIFE DRAMA OF CRIME AND LICENTIOUSNESS." Readers learned about her illegitimacy, her short-lived marriage to the jewelry clerk Peacock, the ex-congressman who briefly kept her, and most of all her adulterous affair with Frank Leslie, culminating in the sordid scheme to disgrace and divorce Squier. "They have set aside all the laws of God and man," the anonymous writer charged. "Their own selfish ends have been their only thoughts. . . ." Leslie compiled a list of several suspects as the conduit to the Nevada paper while he tried to buy up all available copies of the issue, but there was only one candidate with the requisite knowledge—

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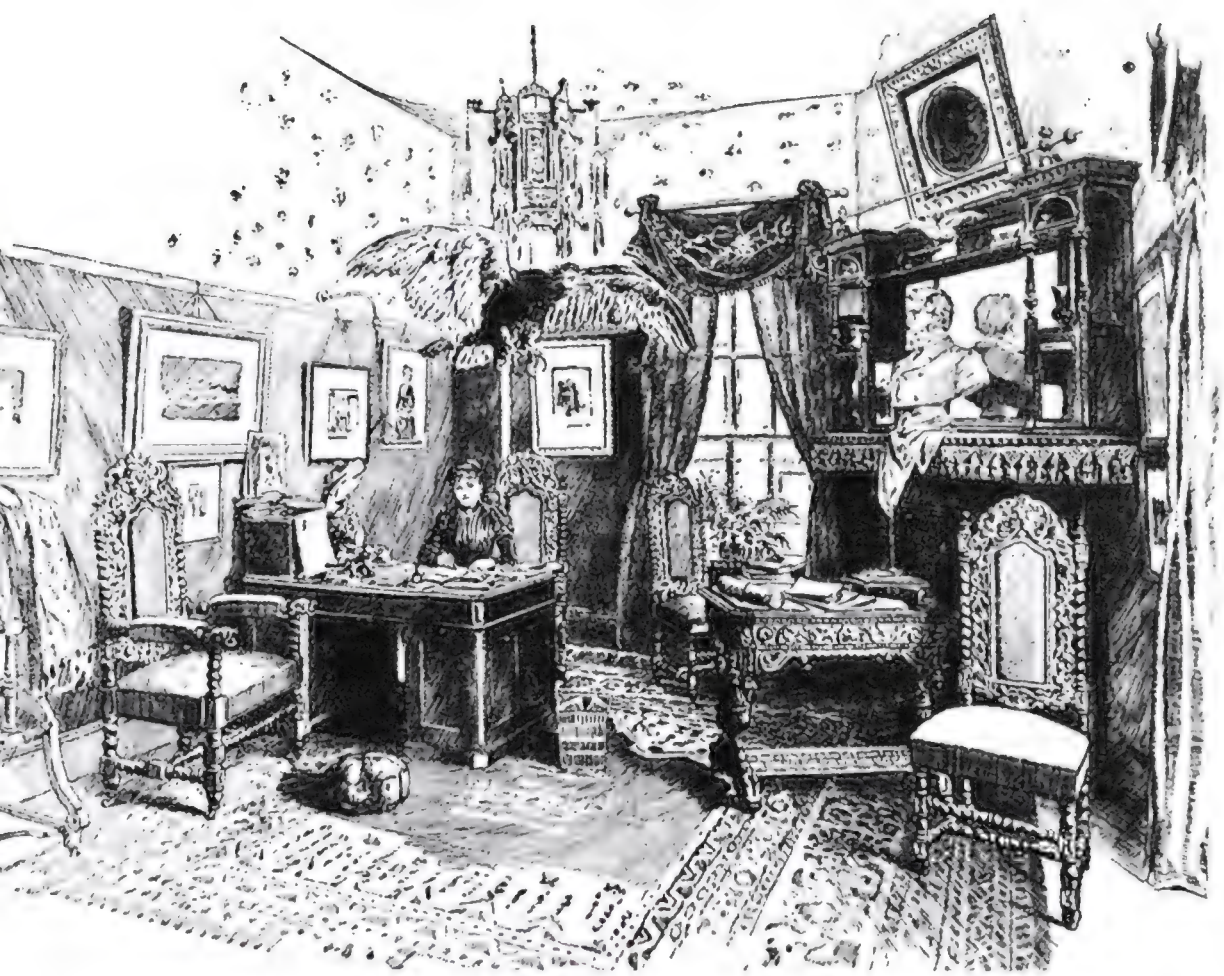
and spite: E. G. Squier, who would spend his life in and out of the asylum, finally had his revenge. Miriam, meanwhile, seems to have reacted by not reacting. If she said or wrote anything in response to the attack, no record of it survives.

Frank, struggling to salvage his business amid the buzz, negotiated a 50 percent settlement of his debts, but before he could finish repaying them he died of throat cancer, in January 1880. Miriam, widowed at 43, inherited the debt along with the papers. Dramatic as always, she vowed never to dance or to wear color again. Alone now, with a deflated bank account and a muddied reputation—she spoke later of being reduced to living in a "carpetless flat"—she was in fact on the brink of her finest hour.

After fending off a flurry of lawsuits contesting Frank's will, Miriam confronted a pay-in-ten-days ultimatum from a group of creditors. She made the $50,000 payment with the aid of what she called "a little romance"—a young artist Leslie had befriended persuaded a wealthy widow to loan her the money, with Miriam's diamonds as collateral. She next had her name legally changed to Frank Leslie so she could continue to use the name in the publications. The problem now was repaying the widow and reclaiming the stones.

Her professionalism saved her—and the Leslie empire. When an assassin gravely wounded President James Garfield on Saturday, July 2, 1881, Miriam immediately sent two artists to Washington, summoned the entire staff to work on Sunday and produced an issue of the *Illustrated Newspaper* with full coverage of the shooting by Tuesday; she put out an extra edition that Friday and published the regular edition the following Tuesday, all with double-page engravings. Issuing three editions of a pictorial in one week was unprecedented, and so were the rewards—an explosion in the paper's circulation from 30,000 to



At her empire's Fifth Avenue headquarters, Miriam's office possessed an imposing aura. A bust of her late husband stood on the mantle; a stuffed eagle soared overhead.

200,000 and a chorus of praise for the enterprising editor.

Having seized the initiative on the biggest story she had ever encountered, she doggedly held on to it. *Leslie's* ran dozens of pictures of the stricken President, his family and the assassin, Charles Guiteau, while Garfield lingered for more than two months before finally succumbing on September 19. When he died that Monday night after the paper had gone to press, Miriam ordered the pressrun halted and hastily put together a new edition that appeared on Wednesday. She pulled off another coup by reaching the streets a day early with coverage of the funeral. Miriam would never again be relegated to the women's and family journals: she was a hard-news star, saluted as the "Empress of Journalism" and a "commercial Joan of Arc." Almost incidentally, she repaid the $50,000 loan and retrieved her diamonds.

She demonstrated business savvy as well as editorial acumen, reorganizing staffs, cutting back the number of periodicals that Leslie had so zealously increased, until by 1885 there remained only two weeklies and four monthlies. By then she was earning $100,000 annually while meeting a payroll for as many as 400 employees. The talk about crime and licentiousness had subsided, replaced by requests for interviews, speeches and articles. She still churned out essays and an occasional book, employing this forum to ponder relationships and argue for equality between the sexes.

In the late 1880s and the 1890s Miriam moved effortlessly into a role she had seemingly been preparing for all her life—the gracious, bespangled grande dame, hostess of a weekly salon where the rich and accomplished mingled with the merely rich. Like many of New York's upper crust, she had a taste for European royalty. She was engaged for a while to a French-English marquis of no known distinction, abandoning him in favor of a Russian prince. An ugly scene erupted in London's Hyde Park when the marquis spotted her on a carriage jaunt with the prince, nearly precipitating a duel—and this when the object of all this aristocratic attention had already crested 50.

She settled, mistakenly as it turned out, for the witty if notoriously bibulous William C.K.W. Wilde, brother of author-playwright Oscar Wilde. Their hasty 1891 marriage lasted only two years, most of which Wilde

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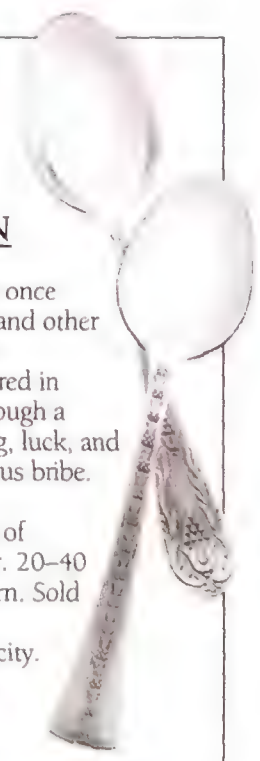

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spent drinking on Miriam's tab. When told of his wife's complaint, that he spent his waking hours at his club, he replied, "What of it? . . . Don't I spend her money there too? It's an even thing between us."

Miriam eased out of publishing in stages. She sold the remaining Leslie weeklies in 1889, allowing her to concentrate on the *Popular Monthly*. In 1895, nearing 60 (though never admitting it), she leased the three surviving monthlies and the annual almanacs to a syndicate, but three years later the company was mired in such financial trouble that they asked her to return as president and editor-in-chief of the *Popular Monthly*. She promptly streamlined and livened up the magazine while cutting its price, and within a few months the circulation was again on the rise along with the profits; she still had the touch. Two years after that she was forced out in a power struggle, this time for good.

In 1901 she announced on her return from one of her frequent voyages to Europe that she had discovered she was a baroness, by virtue of her descent from Philippe Picot, the first Baron de Bazus, whose family had emigrated to Louisiana. In retirement she continued to write and travel, and even accumulated one more titled lover, a Spanish count who died before they could marry. She increased the fortune she had earned in publishing through investments in Manhattan real estate. At her death in 1914 she was worth close to $2 million.

With no children and only a few relatives, she left most of her estate to the activist Carrie Chapman Catt for "the furtherance of the cause of Woman's Suffrage," a cause that would succeed, with Miriam's help, six years later. Fittingly, she departed as she had lived—on her own terms, with a velvet-gloved gesture of defiance.

Donald Dale Jackson, a frequent contributor, has written on a wide range of historical subjects for SMITHSONIAN.

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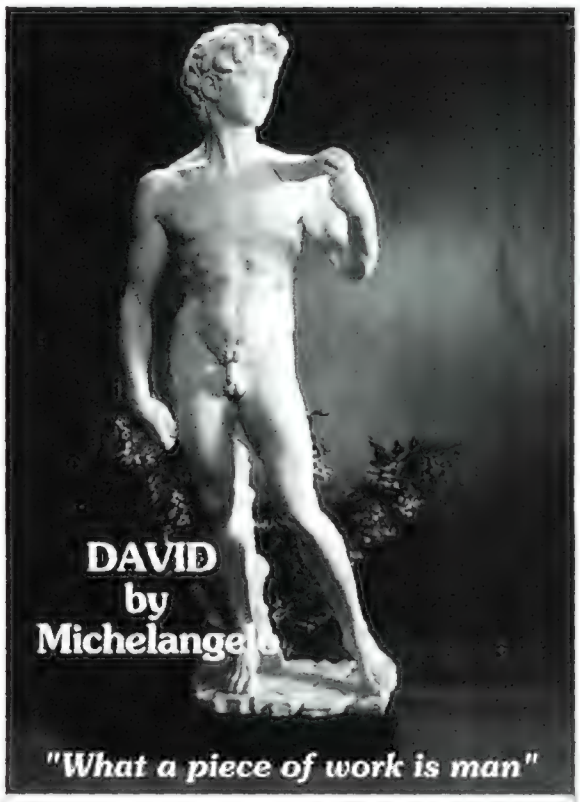

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he remembers, "I ripped the page out and tore it into small pieces. The children followed the proceedings with intense expectancy. I took a piece of blue paper and carefully tore it into small disks. Then I did the same with pieces of yellow and green paper. I put my briefcase on my knees to make a table, . . . placed the round pieces of colored paper onto the leather stage and improvised a story about the two colors."

The result of his efforts was his first picture book, *Little Blue and Little Yellow*, published within months by the firm MacDowell Obolensky. From that fortuitous beginning, Lionni has gone on to write and illustrate more than 30 picture books, which have sold millions of copies throughout the world and include four Caldecott Honor titles, *Inch by Inch*, *Frederick*, *Swimmy* and *Alexander and the Wind-Up Mouse*. (A selection of his books, *Five Lionni Classics*, also is available on videocassette from Random House.)

Fortunately for Lionni fans, a handsome collection of his works, *Frederick's Fables: A Treasury of 16 Favorite Leo Lionni Stories*, has just been published by Knopf. The appearance of this compendium coincides with the release of Lionni's autobiography, *Between Worlds*, also from Knopf.

His memoir offers an excursion, in the company of a humane and literate guide, into the worlds that have shaped his protean career as an artist, designer, sculptor and children's book author. Lionni began drawing in his early childhood: he grew up in Amsterdam, a few blocks from the Rijksmuseum. "On many a Saturday morning," he writes, "while my schoolmates met in the park for a game of soccer, I would walk to the museum with a box of pencils, a small drawing board, sheets of paper, and a folding chair. . . . There in the great hall, I would draw." He was also a passionate amateur naturalist-collector and a painstaking architect of elaborate terrariums.

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In that garret of his childhood lay the sources of the magical books he would create. "Not so long ago," Lionni writes, "I suddenly realized that the dimensions of my children's books are exactly the same as those of my terrariums. I also discovered that the protagonists of my fables are the same frogs, mice, sticklebacks, turtles, snails, and butterflies that more than three-quarters of a century ago lived in my room. And even the paper landscapes they now inhabit are identical to the ones I used to build with real sand, pebbles, moss, and water."

Each of Lionni's books is imbued with a dreamy ardor, the glowing images and measured text paying homage to everyday beauties, to light and to life. In *Frederick*, for instance, an aspiring poet field mouse has stored away the memories of colors and the cadences of verse to sustain his family throughout a winter of cold and hunger. The little bird who is the central figure in *Tico and the Golden Wings* dispenses his gilded feathers to assuage loss: "I gave my golden feathers away," Tico explains, "and . . . I bought many presents: three new puppets for a poor puppeteer, a spinning wheel to spin the yarn for an old woman's shawl, a compass for a fisherman who got lost at sea . . ." And the murine protagonist of *Alexander and the Wind-Up Mouse* ventures deep into an enchanted garden in order to transform and rescue a beloved friend. Lionni's heroes and heroines are, one and all, rooted in openheartedness and generosity—traits that should amplify every child's sense of what is right with the world.

Today, Lionni, who spent his young manhood in Italy (he fled the Fascists for America in 1939), divides his time between a New York City apartment and a 17th-century farmhouse in Tuscany. Many of his children's books have taken shape on sunny afternoons in an Italian studio. In that world, where bees drone, geraniums bloom and lizards skitter across stone paths, Lionni's dreams have transmogrified into timeless picture stories.

This year's children's titles, too, let us lay claim to imaginary landscapes where darkness gives way to light; honor and simple kindness win out; and creativity redeems us all.

Please note that age categories are really quite arbitrary: consult the temperament and predilections of the individual child.

FOR THE YOUNGEST READERS [2-4 YEARS]

A Year Full of Stories: 366 Days of Story and Rhyme by Georgie Adams, illustrated by Selina Young (Doubleday, $24.95 through December, $29.95 thereafter) Dauntless Dr. Dog to pixilated billy goats, a ravishingly original anthology of short selections, for children from age 2 to 6 or so.

The Mice of Mousehole written and illustrated by Michelle Cartlidge (Candlewick, $14.99) Another entrancing installment in the author's chronicle of the venturesome Mouse family, and an inventive lift-the-flap book that will offer toddlers hours of absorbing fantasy.

Good Times with Teddy Bear written and illustrated by Jacqueline McQuade (Dial, $12.99) Scuffling in crisp leaves, playing checkers, snuggling into bed, a reprise of a toddler's day that is certain to become a favorite.

Beep! Beep! Oink! Oink! Animals in the City written and illustrated by Patricia Casey (Candlewick, $16.99) On crowded sidewalks, in backyards and on rooftops, pigeons and dogs, foxes and bats, share our space. This witty walking tour should engage even the squirmiest listener.

A Child's Seasonal Treasury compiled and written by Betty Jones (Tricycle Press, Berkeley, California, $22.95) Constructing paper lanterns to baking hot-cross buns, a cornucopia of songs, poems, recipes and crafts conjures up a simpler time for children as young as 2, all the way up to 7 or beyond.

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Nocturne by Jane Yolen, illustrated by Anne Hunter (Harcourt Brace, $15) In the moonlit hours of "owls with deep feathers," dozing dogs and children "tucked up under eiderdown," the sleep spirits reign. Hunter's paintings are dreamy and delectable.

FOR MIDDLE READERS
[4-10]

The Big Katie Morag Storybook written and illustrated by Mairi Hedderwick (Bodley Head/Trafalgar Square, North Pomfret, Vermont, $19.95) An irresistible reintroduction to the beloved Katie tales, this collection of stories and poems offers passage to the fictional Scottish isle of Struay. The author has drawn on the years she lived on isolated Coll to create a winning evocation of sea, sky and close-knit village life.

The Summer of Stanley by Natalie Kinsey-Warnock, illustrated by Donald Gates (Cobblehill, $14.99) Stanley is (you'll never guess) a goat and a first-class nuisance, too. (It's 1945 and the victory garden is a goner.) Yet he manages to prove his mettle in a winsome tale from home-front America.

Author: A True Story, written and illustrated by Helen Lester (Houghton Mifflin, $10.95) From the creator of *Tacky the Penguin* and other hilarious hits, a self-deferential and endearing account of the scribbler's trials. Could be a crossover hit: grown-ups suffering from writer's block surely could benefit from Lester's revelations.

Marven of the Great North Woods by Kathryn Lasky, illustrated by Kevin Hawkes (Harcourt Brace, $16) In 1918, during the influenza epidemic, the author's father was sent away from the outbreak in Duluth to a Minnesota logging camp. This tale of the kindly lumberjacks who looked after a shy and bookish boy is unforgettable.

Junk Pile! by Lady Borton, illustrated by Kimberly Bulcken Root (Philomel, $15.95) Hubcap rosebushes, sculptures from fan belts: a young artist discovers beauty in the most

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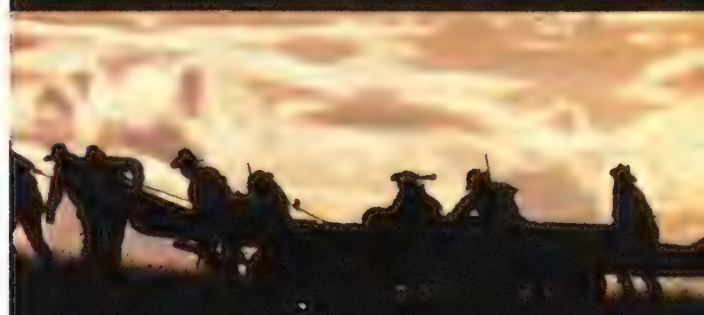
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unlikely of places, her father's junkyard. Borton's portrait of a plucky heroine, set in Appalachia, is testament to the power of the imagination.

A Street Called Home written and illustrated by Aminah Brenda Lynn Robinson (Harcourt Brace, $18) In an accordion-style foldout book with flaps, the author has re-created the lost world of Mount Vernon Avenue in 1940s Columbus, Ohio. Along the way, she opens doors on the lives of people—the vegetable vendor, the herbalist—who inhabited a thriving African-American neighborhood.

Little Bobo Saves the Day by Serena Romanelli, illustrated by Hans de Beer (North-South, $15.95) The return of the violin-toting orangutan is a welcome diversion indeed: in this episode, Bobo braves the world outside the rain forest to locate medicine for his ailing uncle. A surefire child pleaser.

Jump the World: Stories, Poems, and Things to Make and Do from Around the World written and illustrated by Sarah Pooley (Dutton, $17.99) Don't stay home without it: this whirlwind tour offers tempting TV alternatives for children from 4 to 10 or so.

The Girl Who Dreamed Only Geese and Other Tales of the Far North, told by Howard Norman, illustrated by Leo and Diane Dillon (Harcourt Brace, $22) The novelist and two master illustrators have created a radiant rendition of ten Inuit tales, evoking a world of polar bears and puffins, shamans and snowstorms. From these pages emanate wisdom and compassion in great measure.

The Mother-Daughter Book Club by Shireen Dodson (HarperPerennial, $12.95) Journeying into the life of the mind with your daughter: Dodson's primer on reading together features reading lists and discussion guides.

Treehouse Tales by Anne Isaacs, illustrated by Lloyd Bloom (Dutton, $14.99) From their perch in a chestnut tree, at once their lookout and hideaway, three Pennsylvania farm children from the 1880s find adventure

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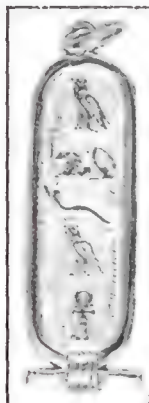

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and emergent selfhood on the frontier. This high-spirited round of stories has the makings of a classic.

The Adventures of Odysseus retold by Neil Philip, illustrated by Peter Malone (Orchard, $17.95) The ultimate adventurer, his exploits recast vividly by a writer-folklorist, beckons us to set out on the long voyage to Ithaca. The paintings shimmer with the light of the Aegean.

Seven Brave Women by Betsy Hearne, illustrated by Bethanne Andersen (Greenwillow, $15) The author delved into her own family history to weave a tapestry of kindliness and accomplishment: the farmer and artist, physician and architect and homemaker she describes were her own forebears.

The Milkman's Boy by Donald Hall, illustrated by Greg Shed (Walker, $16.85) Hall continues his cycle of stories from rural and small-town America (SMITHSONIAN, November 1996) in a tribute to the dairy business owned by his father's family from the late 19th century to the 1960s. Donald Hall is a national treasure.

Clouds for Dinner written and illustrated by Lynne Rae Perkins (Greenwillow, $15) If your parents love poems and paintings and scudding clouds, certain amenities may slip, say providing sit-down dinners and making the beds. A celebration of quotidian magic and family affection that belongs on every child's bookshelf.

Tomás and the Library Lady by Pat Mora, illustrated by Raul Colón (Knopf, $15) One summer in 1940s Iowa, a librarian welcomed a migrant worker child who found the wider world—and his future—in books. This powerful story is based on the boyhood of Tomás Rivera, who would grow up to become chancellor of the University of California, Riverside.

Meredith: The Witch Who Wasn't by Dorothea Lachner, illustrated by Christa Unzner (North-South, $15.95) Not really cut out for a life of broomsticks and incantations, one noncon-

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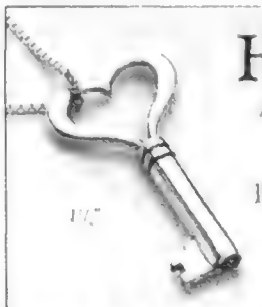

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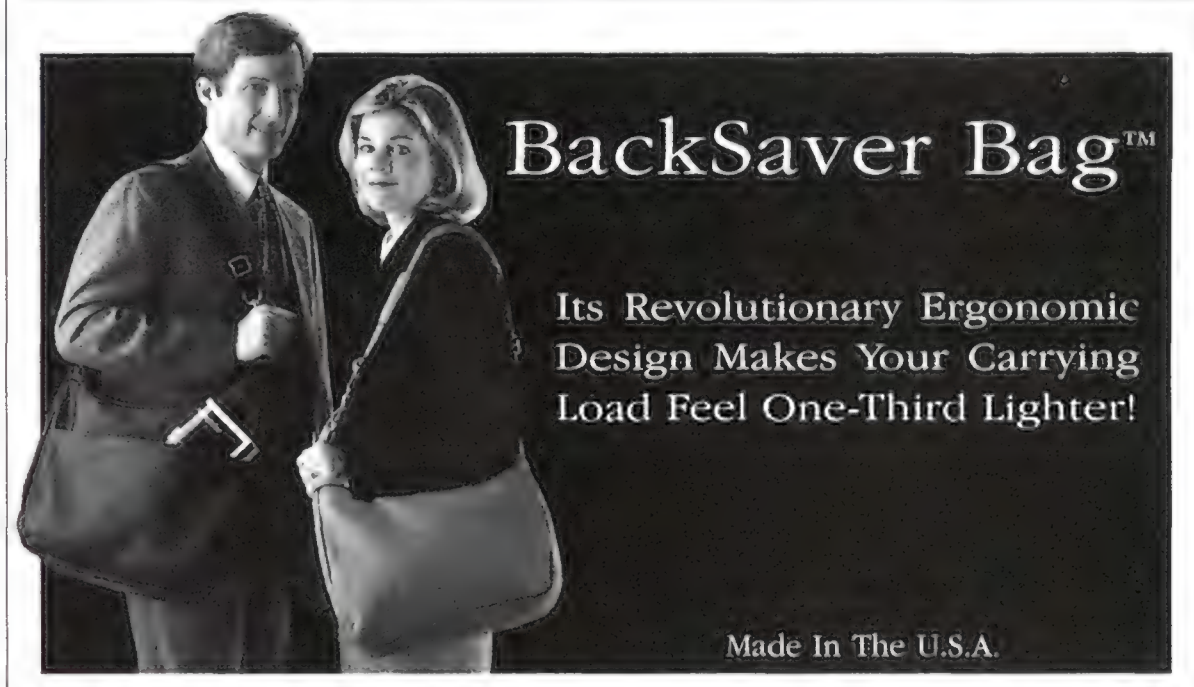

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formist sorceress decides to "bake bread from scratch" and take up domesticity instead, in a clever subversion of wicked witchery.

Mythical Birds and Beasts from Many Lands by Margaret Mayo, illustrated by Jane Ray (Dutton, $19.99) From the rocky shores of Cornwall to the forests of Burma, tales of mermaid and Minotaur, rivetingly retold.

The Blue Hill Meadows by Cynthia Rylant, illustrated by Ellen Beier (Harcourt Brace, $16) Four stories convey a year in the life of the Meadow family, homebodies at peace with the world in Blue Hill, Virginia. This tranquil quartet introduces a family we hope we shall hear more of.

Lives of the Athletes: Thrills, Spills (and What the Neighbors Thought) by Kathleen Krull, illustrated by Kathryn Hewitt (Harcourt Brace, $19) These quirky profiles of sports figures, Jim Thorpe to Babe Didrikson Zaharias and Pelé, are breezy and inspiring.

Over the Moon: An Adoption Tale written and illustrated by Karen Katz (Henry Holt, $15.95) The author, who traveled to Central America in 1991 to adopt an infant, drew on her own experiences to create this lilting account of a journey into the province of parenthood.

Til Year's Good End: A Calendar of Medieval Labors by W. Nikola-Lisa, illustrated by Christopher Manson (Atheneum, $16) Mending sheepfolds, weaving reeds into baskets, harvesting grain—the work of the Middle Ages, illumined by dramatic watercolors.

Passage to Freedom: The Sugihara Story by Ken Mochizuki, illustrated by Dom Lee, afterword by Hiroki Sugihara (Lee & Low, $15.95) In 1940, Chiune Sugihara, the Japanese consul to Lithuania, defied his own government and personally issued visas to Jewish refugees fleeing from Poland. He may have saved as many as 10,000 lives. This testament to one man's courage should be read in homes and classrooms across the nation and the world.

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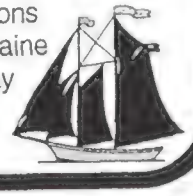

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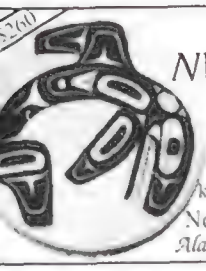

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Farmer's Market written and illustrated by Paul Brett Johnson (Orchard, $15.95) Homegrown tomatoes heaped high: into a Saturday world where a farm girl is granted her wish on the day she helps out at her family's produce stand. Johnson transports us to a vanishing America.

A Rainbow at Night: The World in Words and Pictures by Navajo Children by Bruce Hucko (Chronicle, $14.95) Mesas glowing in the dusk, weavers at the loom—an odyssey, guided by youngsters 5 to 13, into Native American creativity and culture.

The Most Beautiful Roof in the World: Exploring the Rainforest Canopy by Kathryn Lasky, photographs by Christopher G. Knight (Harcourt Brace, $18) This eloquent explication of field scientist Meg Lowman's work in the realm of macaw and bromeliad could lead a child to a life's work.

The New Oxford Treasury of Children's Poems compiled by Michael Harrison and Christopher Stuart-Clark, illustrated by selected artists (Oxford University Press, $25) The anthology format raised to new heights: this collection of verse, by bards as various as Yeats and Nikki Giovanni, should hold pride of place on any youngster's bookshelf.

The Borrowed Hanukkah Latkes by Linda Glaser, illustrated by Nancy Cote (Albert Whitman, Morton Grove, Illinois, $15.95) A celebration of golden potato pancakes and candles burning bright, this evocation of the winter holiday glows with neighborliness and cheer.

Elephant Woman: Cynthia Moss Explores the World of Elephants by Laurence Pringle, photographs by Cynthia Moss (Atheneum, $16) At Kenya's Amboseli National Park, researcher

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Cracked Corn and Snow Ice Cream: A Family Almanac by Nancy Willard, illustrated by Jane Dyer (Harcourt Brace, $18) "When I was a child," the author writes, "the only place more exciting than Oz was Iowa." She and illustrator Dyer traveled the back roads of Iowa and Wisconsin, transcribing the recollections of their rural relatives. The result is a fetching compendium, chock-full of country lore and first-person family history.

Rikki-Tikki-Tavi by Rudyard Kipling, adapted and illustrated by Jerry Pinkney (Morrow, $16) This version of a classic, the tale of the courageous mongoose who vanquishes all cobra enemies, is a triumph. Pinkney's illustrations are works of genius.

Richard Wright and the Library Card by William Miller, illustrated by Gregory Christie (Lee & Low, $15.95) In 1920s Memphis, the young man who would become a great American writer could not borrow books from the whites-only library. Ultimately, Wright forged his own passage to Dickens and Tolstoy: Miller's transcendent account of this moment is memorable indeed.

The Adventures of Pippi Longstocking by Astrid Lindgren, illustrated by Michael Chesworth (Viking, $25) At last, all of the red-braided rebel's most exciting escapades (SMITHSONIAN, November 1995), replete with new line drawings and color plates, collected in one volume.

Finding Walter by Ann Turner (Harcourt Brace, $16) When two sisters arrive at their grandmother's country house for a year's stay, they restore a long-abandoned dollhouse and its family to the world of play. Then the magic begins. This touching and timeless novel is certain to become a perennial favorite.

Bright Star by Gary Crew, illustrated by Anne Spudvillas (Kane/Miller,

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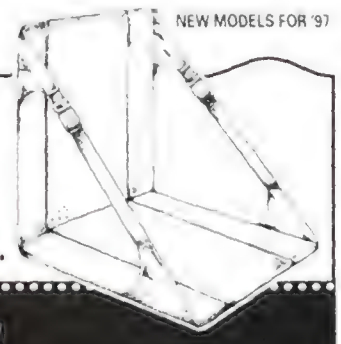

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The Gardener by Sarah Stewart, illustrated by David Small (Farrar, Straus, Giroux, $15) Stewart's enchanting story, at once an ode to the art of growing things and a window on the Depression, also pays homage to roof gardens, spunky heroines, the lost art of letter writing and happy endings.

The National Wildlife Federation Book of Family Nature Activities by Page Chichester (Henry Holt, $14.95) Wading into swamps to attracting hummingbirds: the 50 projects described here will indeed "make learning a family adventure."

The Neptune Fountain: The Apprenticeship of a Renaissance Sculptor written and illustrated by Taylor Morrison (Holiday House, $15.95) In 17th-century Rome, a boy enters an artist's studio to learn the demanding art of creating monumental figures. This skillful amalgam of fact and fiction limns an era and an art form.

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Run Away Home by Patricia C. McKissack (Scholastic, $14.95) In this page-turning novel, the author has turned for inspiration to her Native American and African-American ancestors. Set in Alabama in 1888, this account of a sharecropper family who gives refuge to a fugitive Apache boy illumines a little-known interlude in American history.

Project Puffin: How We Brought Puffins Back to Egg Rock by Stephen W. Kress, as told to Pete Salmansohn (Tilbury House, Gardiner, Maine, $16.95) The true story of biologist Kress' dream—to restore the habitat on two Maine islands and reestablish Atlantic puffins there—is by turns

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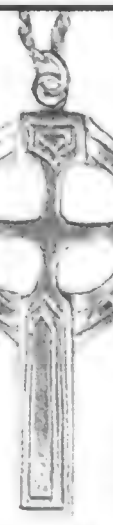

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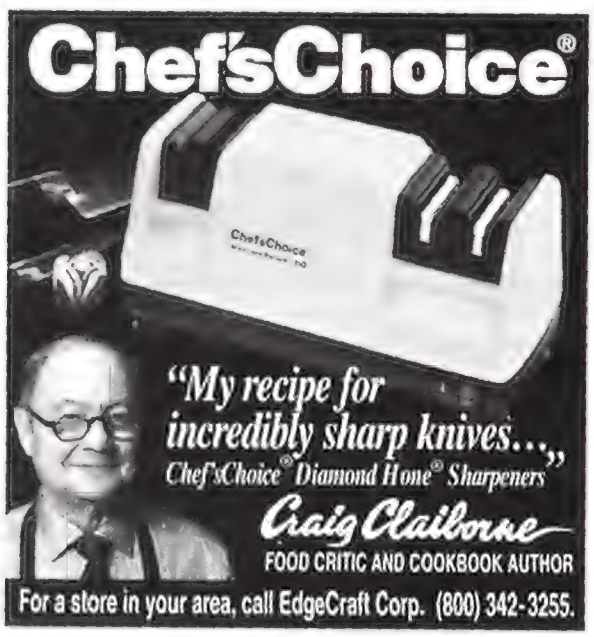

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Leon's Story by Leon Walter Tillage, collage art by Susan L. Roth (Farrar, Straus, Giroux, $14) Leon Tillage, born the son of a sharecropper in 1936, grew up in the segregated South. His account of those days of terror, and of the family who sustained him, is a remarkable American document.

Children of Summer: Henry Fabre's Insects by Margaret J. Anderson, illustrated by Marie Le Glatin Keis (Farrar, Straus, Giroux, $14) A biography of the 19th-century Provençal entomologist who "was a famous explorer," although he "seldom left his own backyard." This superb introduction to the challenge and joy of scientific observation should inspire the next generation of field scientists.

The Atlas of the Classical World by Piero Bardi, illustrated by Paolo Ravaglia and Matteo Chesi, Ferruccio Cucchiarini, with Michael Grant, consultant (Peter Bedrick, $19.95) The large-format volume represents a foray into worlds from Minoan Crete to classical Athens and Rome. Spectacular illustrations and accessible scholarship make for a rare and wonderful reference book.

Oh Freedom! Kids Talk About the Civil Rights Movement with the People Who Made It Happen by Casey King and Linda Barrett Osborne, foreword by Rosa Parks (Knopf, $18) In a series of 31 interviews, children took tape recorders into the homes of family members, friends and activists and created a vivid documentary account of the movement. The message, as Rosa Parks writes, is clear: "ordinary people working together can change history."

Nesuya's Basket by Carol Purdy (Roberts Rinehart, $8.95) The Maidu Indians of Northern California were a peaceable nation of hunter-gatherers. This novel, recounting a Maidu girl's adolescence in the 1840s, as settlers began to arrive, is a revealing portrait of an imperiled culture.

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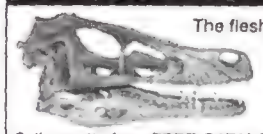

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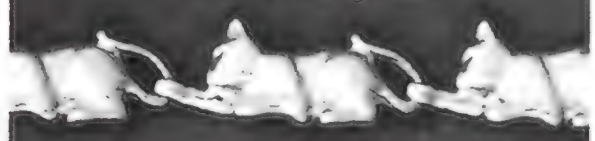

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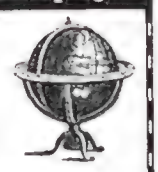

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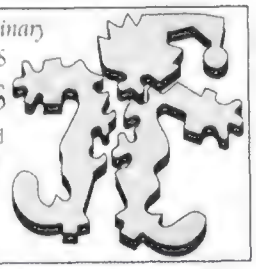

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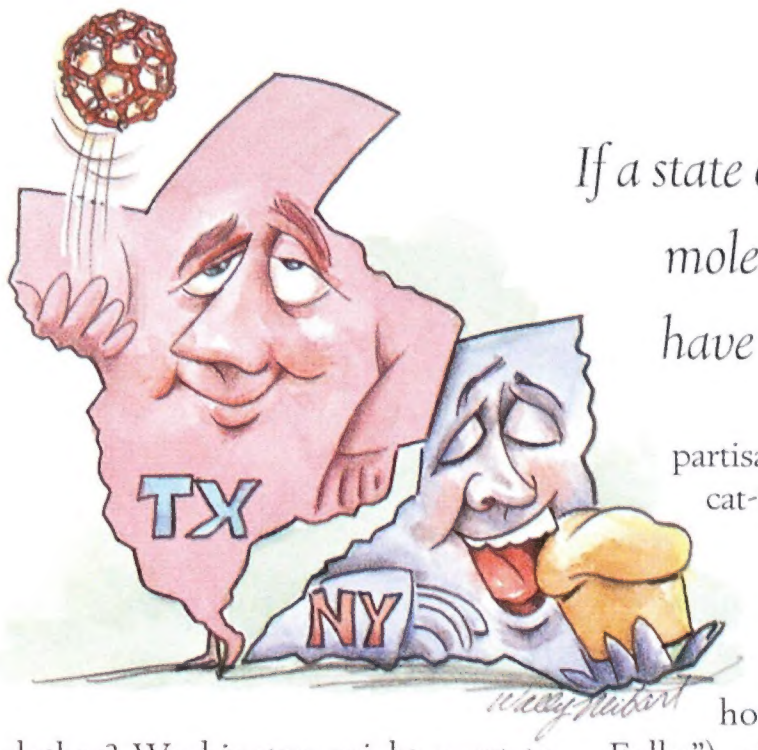
THE LAST PAGE

Symbolically Speaking

BY DONALD DALE JACKSON



If a state can have an official molecule, heck, it can have a state anything.

I READ RECENTLY THAT A LEGISlator in Texas proposed that the buckyball be made the official state molecule. Ignoring the essential wackiness of a molecule called a buckyball, it seems to me that this development raises interesting possibilities for official state designations.

I mean, if a state can have an official molecule, what the heck, it can have a state anything. There could be, for example, a state garment, or piece of furniture; perhaps a state tissue. How about a state body part? Moving to the abstract, perhaps a state alibi. The mind reels and twitches.

A repository of useful data called *Facts About the States* lists current symbols, and most are pretty much what you'd expect—trees and flowers, birds and critters. Amid the predictable entries, however, are some bizarre choices, and it's these that open the door to fantasy. New York, for example, has a state muffin. So why not a state sandwich? Pastrami, for instance. Wisconsin would probably opt for cheddar cheese on white. California, avocado and sprouts. Georgia, peanut butter and jelly.

A few states have juices as their official beverage, but no state has a designated omelette. The scramble for the Western omelette could get pretty fierce, I bet, with Arizona and Wyoming and all the rest bidding for it.

Massachusetts' state dessert is Boston cream pie. Shouldn't there be a state snack? Low-fat pretzels, say, for Colorado? Salsa and chips for Texas?

Consider apparel. The bolo tie is Arizona's official state neckwear. Why not other officially designated clothes? Washington might want to consider the trench coat or rain slicker as the state outerwear. California could opt for sandals as the state footwear. New Jersey? That's easy: the undershirt.

There are state insects aplenty, with bees, ladybugs and butterflies getting the most buzz. But I think we need a state pest, and it shouldn't be limited to bugs. The Nebraska pest, for example, could be a telemarketer for an aluminum-siding company. In Indiana, it could be junk mail promising million-dollar checks, while in New Hampshire it might well be a man I know named Henry.

One of the most intriguing entries in *Facts About the States* is Maryland's official sport: jousting. That's what it says, jousting. It strikes me as doubtful that there are all that many jousters ramming their lances around Maryland, which suggests it's not hard to get a state-sport designation approved. Three or four ardent boulder-heavers could probably get that pastime named the state sport of, say, Delaware. A small band of committed partisans might do the same for cat-treeing in Mississippi.

States have mottoes, of course, and sometimes pageants ("Indian River," in Florida), poems (Oklahoma's is called "Howdy Folks"), plays (*Fandangle*, in Texas) and even official tug-of-war championships (at the Nelson County Fair, in Kentucky), but I'd like to propose another category: state clichés. I have a few to nominate, but I don't want to get into trouble, so I'll provide the clichés and you can pick the state.

1. Between a rock and a hard place
2. Go for it
3. Land of milk and honey
4. Everybody's gotta be somewhere
5. Please bus your own trays

I also wonder whether it would be helpful to have an official state attitude. This would be tricky, because if it caught on it could stick to the residents and affect their self-image. No state would be apt to adopt timidity, for example. There would be a rush to toughness, can-do efficiency and wholesome have-a-nice-dayness. But I'd like to see a determined group of let-it-all-hang-out legislators convince their colleagues to approve an altogether different kind of state attitude. They could run it on their license plate: STATE NAME (you fill it in), Land of Haughty Disdain.

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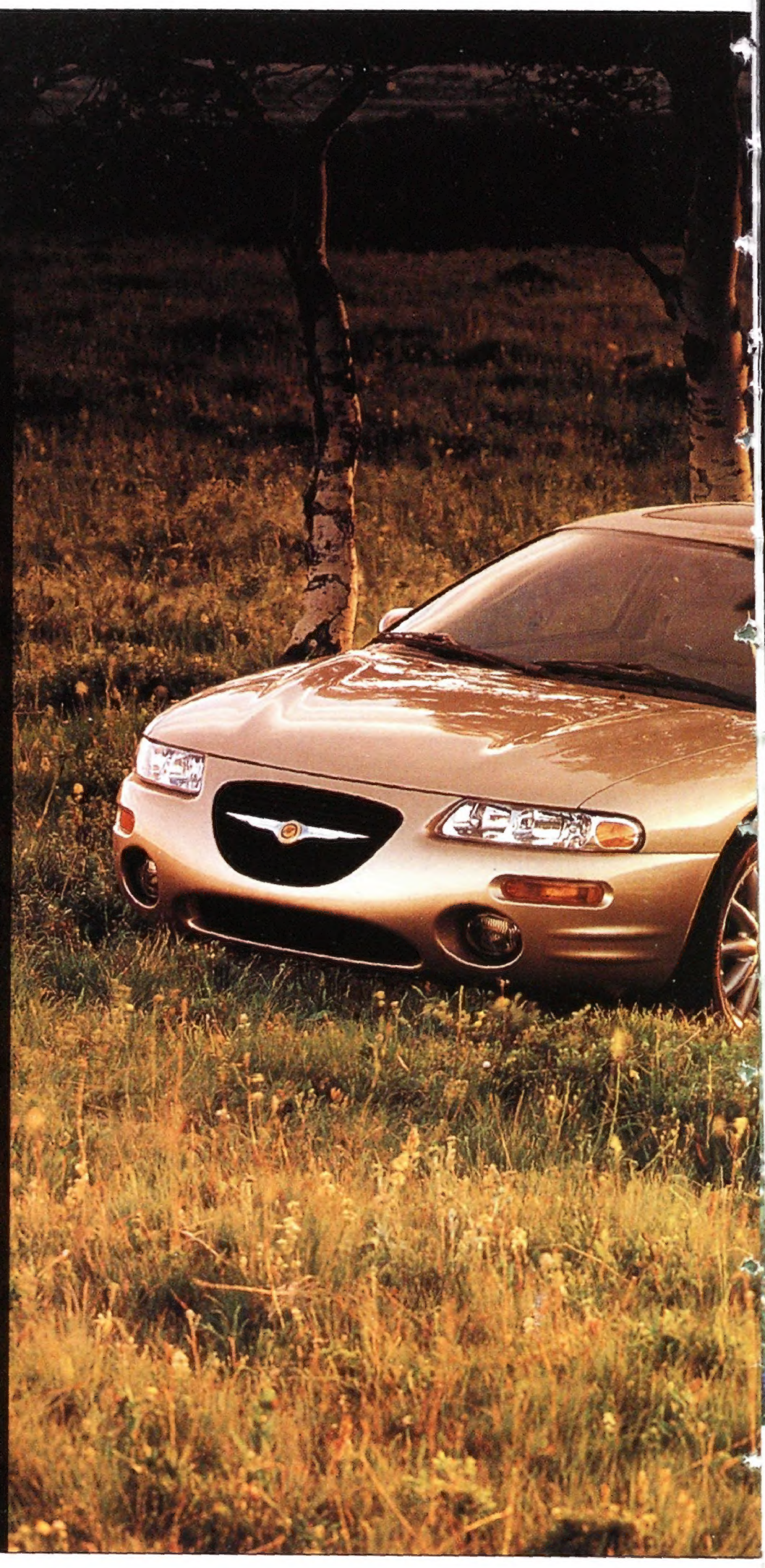

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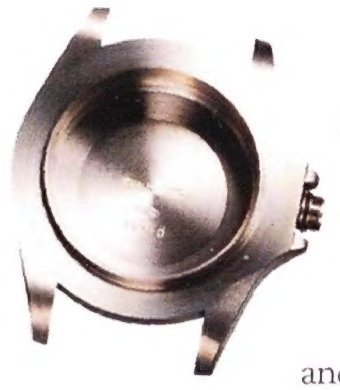

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